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THE BRITISH WINTER GARDEN.

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THE

BRITISH WINTER GARDEN:

BEING A PRACTICAL TREATISE ON

EVERGREENS;

SHOWING

THEIR GENERAL UTILITY IN THE FORMATION OF GARDEN
AND LANDSCAPE SCENERY,

AND

THEIR MODE OF PROPAGATING, PLANTING, AND REMOVAL
FROM ONE TO *FIFTY* FEET IN HEIGHT,

AS

PRACTISED AT ELVASTON CASTLE.

BY WILLIAM BARRON,
HEAD GARDENER.

LONDON:
BRADBURY AND EVANS, 11, BOUVERIE STREET.
1852.

LONDON:
BRADBURY AND EVANS PRINTERS, WHITEFRIARS.

Landscape
Thorp
12-28-38
37391

1-10-39 J.A.

ADDRESS TO THE READER.

In these days of book and money-making enterprise, time is, as it ever has been, a most valuable commodity; and no one has a right to make a demand on the time of another, without assigning a sufficient reason for so doing.

Believing this to be the case, I conceive that I have no right to make a claim on public attention, without a suitable apology.

Book-making has hitherto been no part of my profession, and it may be questionable whether I possess the necessary qualifications. Having through life been a book-worm myself, this much I have learned; that already there are many more works before the public than are read, or have any justifiable claim to be so. Food for the mind in these luxurious days, like food for the body, is extremely varied; more I suppose to pamper the fastidious palate, than to give health and vigour to the stomach and system generally.

Highly garnished and seasoned dishes I leave to others, of different tastes; plain, simple, solid food I find best, and therefore keep to it. Having been nourished somewhat in this way, I have grown up a plain, matter of fact man; and as such, I profess only to lay a few plain, but I trust valuable truths, before that class of readers interested in the subject, and it is pleasing to think that they are on the increase.

Planting, useful and ornamental, has been, is, and will become more every day, an object of deep interest: much has been accomplished, and much more remains to be done, which will manifestly appear, the more the attention of a discerning public is drawn to the subject.

I have had upwards of twenty years' application to the removal of large trees; the planting and replanting of nearly all the kinds of the most valuable and ornamental which are now the pride of British gardens, and that under advantages which few have had; having been fully encouraged therein by the *most noble and liberal-minded employer*, possessing in himself a passionate fondness for artistic gardening, united with *unwearied diligence*, ardent zeal, and distinguished taste, prompting him at all times to take the deepest interest in my operations and experiments, and producing in me, at the same time, a powerful incentive to application. I trust I am not saying too much when I state that such advantages have enabled me to make observations and fully test what can be accomplished in a given time, and to offer suggestions, which, if carried out, will in a short time materially alter the value and aspect of our country. Such an attempt, more especially as it has been frequently urged upon me by those who take an interest in the subject, will, I hope, justify my obtrusion on public notice.

ELVASTON CASTLE,
May 22, 1852.

ADVERTISEMENT.

It was my original intention when writing this work, to have made it answer a twofold purpose (viz.) besides containing all that it now does as a practical volume, I had a desire that it should be embellished with views of the grounds at Elvaston Castle, which the present Earl has graciously permitted me to lay before the public. But in going fully into it, I found that I could not do justice to Elvaston without making the work too expensive for a certain class of readers, who might be anxious to peruse it in its present form; and being desirous, as far as practicable, to place it in the hands of everyone who might wish to profit by it, I found it imperative upon me to abandon my first scheme, and publish it as it now appears.

Knowing at the same time that many are anxious to see the grounds at Elvaston illustrated, and to possess the illustrations, as all who have seen them acknowledge that no abstract account can convey the truth to those who have not seen them, I am happy in being able to say that, for the gratification of such, I have had the advantage of an artist who, I believe, is considered the most successful of the present day, to take fifty of the best views in the Calotype or Talbotype style, which is of course truth itself. A selection from these has been made, and as soon as I have obtained a sufficient number of subscribers they will be lithographed in the first style.

CONTENTS.

INTRODUCTION.

PAGE

HISTORICAL DESCRIPTION OF THE GARDENS AND GROUNDS AT ELVASTON CASTLE 1

CHAPTER I.

The Advantages to be derived from the general adoption of many comparatively new and valuable Evergreen Trees in our ornamental grounds, parks, and plantations 9

CHAPTER II.

On the Pictorial Effects which may be produced by judicious Arrangement in Planting, with due attention to the Selection of Colours or Gradations of Tint, amongst the different varieties of Evergreens 16

CHAPTER III.

On Transplanting Large Trees—what led to it at Elvaston Castle—how accomplished, and with what success—how far justifiable to be followed 25

CHAPTER IV.

Evils arising from the Pot-culture of such Plants as should ultimately become Trees; demonstrated by Wood-cuts, showing sections of valuable trees which have perished through this practice, and a better system pointed out 49

CHAPTER V.

PAGE

Public Prejudices against Plants raised from Cuttings, Grafts, or Layers, attempted to be removed—the Advantages of Propagating valuable Specimens in this manner, showing the necessity of selecting best Varieties 65

CHAPTER VI.

On the Formation of Rocks and Water at Elvaston Castle . . . 71

CHAPTER VII.

The General Adoption of Evergreen Hedges throughout the Country strongly recommended; the Advantages arising therefrom pointed out; as also the easiest mode of accomplishing the same: likewise the General Substitution, in grazing and pasture lands, of Clumps of Evergreen Trees; answering the twofold purpose of Decorating in the highest degree our Landscape Scenery, and affording Shelter to our Cattle; and the evils of our present system of growing Hedge-row Timber pointed out . . . 78

CHAPTER VIII.

A Selection of the most valuable Evergreen Trees and Shrubs which are now available for Ornamental and Useful Planting, with Concise Popular Descriptions 90

CHAPTER IX.

Concluding Remarks 116

INTRODUCTION.

HISTORICAL DESCRIPTION OF THE GARDENS AND GROUNDS AT ELVASTON CASTLE.

On entering upon my situation at Elvaston Castle, in August, 1830, after taking a survey of the place, I found that, whatever might be the nature of our future operations, draining was indispensable to a considerable extent, and that was set about in earnest. Some estimate may be formed of the flatness of the ground, from its being stated that I was obliged to drive a level nearly a mile and a half, before I could obtain sufficient fall to lay the grounds dry. During the progress of the operations, I had time to consider the most likely way to meet the wishes of my noble employer, who at that time was, like myself, a tyro in what we afterwards found so much pleasure in carrying out together. He told me, on first entering his service, that he wished me to make him a garden "second to none," and that I must consider the best way of accomplishing it.

At that time, I found Elvaston to possess a feature which I had neither the power nor wish to alter; this feature consisted in two avenues, planted I believe at the suggestion of the celebrated Capability Browne, who on meeting, by appointment, at Elvaston, the grandfather of the present earl, somewhat startled his lordship by telling him "that it was well, and he would let well alone;" and upon an explanation being demanded, said that the place was so flat, and that there was such a want of capability in it, that he would not meddle with it: but at the same time presenting to his Lordship six cedars of Lebanon, and proposing that they should be planted on the east side of the mansion, forming the commencement of an avenue, to be completed with other trees. Also a south avenue had been planted prior to, or probably at the same time. These two avenues formed the foundation for the style of gardening which has been adopted. Besides the two avenues already named, there existed a terrace formed by a sunk fence, extending on both sides of iron palisading at each side of the entrance gates, which at that time stood in the front of the castle, within 106 yards of it. The terraces were planted on each side with common laurels of a considerable size. A flower-garden on the north side of the Castle, (now entirely changed,) a few large beds in the east avenue for roses and honeysuckles, and a small flower-garden on the site of a former gravel-pit; a kitchen-garden of two acres, and a labyrinth which remains unaltered, constituted the whole of the gardens. The approach to the castle on the south side, came in a straight line from the gates at the north end of the south avenue, as shown in wood-cut.*

The views here given of the grounds in front of the Castle,* as they then were, will manifest the utter impossibility of anything of importance being accomplished in so limited a space; consequently, I suggested to his Lordship the removal of the gates and palisading with sunk-fence wall, &c., to the south end of the lime-tree avenue; thus enclosing a space of sixteen acres, now the site of our present Pinetum, with side avenues; although properly speaking the whole place may be said to compose one vast Pinetum, artistically treated. The illustrations of the side avenues as they now appear in 1852, contrasted with the grass fields as they were in 1832, will at once show what has been accomplished in that direction, and the space immediately in the south-front of the castle, as shown in the engravings of 1831, and 1852, will also show what has been achieved there. The space of ground where the view is given of the present circle of approach, was, in 1832, occupied as an old orchard and young oak plantation beyond.*

The grand avenue on the east front of the castle, in 1832, was an irregular piece of ground, and between the cedars of Lebanon (close to the Castle) and elm-trees in the distance, a plantation had been formed of young oaks: and nearer to the Castle several large oak trees grew, considerably within the line of avenue; which oak trees were felled, including the hedges, in front of the young oaks, besides many of those which came within the lines of avenue. The ground on both sides was levelled, the present walk formed, and with the exception of the six large cedars next to the Castle, all the evergreen trees as they now appear have been planted. The view of the avenue also beyond the large elm trees was extended for several miles by cutting down all the trees and lowering the hedges, which came within the lines, so that the apparent extent of the avenue to the Gotham Hills, in the distance, is about ten miles; on turning to the north-west front of the Castle in 1831, with the exception of a flower-garden laid out in the geometrical style, upon an irregular and uneven piece of ground, nothing but a wood presented itself, including a portion of the group of cedars of Lebanon which surround the Castle, and beyond these a small fish-pond, on the other side of which was the paddock, as shown in wood-cut.* The different views of the lake and surrounding scenery will show what has been done in this part of the grounds.* It may be well to mention that in 1838 there was not a stone or morsel of rock anywhere surrounding the margin of the lake, or islands; the whole as now seen, including the rockery, old yew trees, and other evergreens composing the views now given,* have been placed there since that period.

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* The wood-cuts and views alluded to will appear in the Illustrations of the Grounds.

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* The wood-cut and views alluded to will appear in the Illustrations of the Grounds.

During the time of the third Earl of Harrington, much had been done to improve the estate in the way of planting forest trees, almost exclusively oak. But besides the gardens which existed in 1831, before alluded to, not anything had been done to ornament the grounds. Loudon, in his "Garden Statistics of the County," did not even notice it, and in county maps a cross [†] to mark the church, was the only prominent feature given to indicate the existence of such a place. From the commencement of my professional studies, I have been passionately fond of evergreens, and cherished the scheme of planting them largely, whenever an opportunity should be presented which would enable me to do so. I found no difficulty on this point with my late noble employer, as he naturally possessed, in an extraordinary degree, the organ of colour. But at that time the only distinction made was betwixt evergreen and deciduous trees, the former possessing a twelvemonth's charm, and the latter that of five or six months. On these points we thought alike. The great variety of tints found amongst evergreens, and their subsequent arrangement, so as to produce pictorial effect in the landscape, was an after study. Having had considerable advantages in early life, at the Edinburgh Botanic Gardens, and other botanical schools, my predilection for variety induced me to make an effort for the introduction of such evergreens as at that period I knew to be hardy. From the want of botanical knowledge on the part of my employer, which he afterwards very much deplored, (by his frequent allusion to the subject,) I found it difficult to introduce to his notice anything beyond the common varieties, such as laurels, common yews, and holly, and the common varieties of fir; and it was not until 1835 that I could succeed in commencing the formation of a Pinetum; and from his Lordship never having been a member of the Horticultural Society, we laboured under the disadvantage of not being able to obtain our plants from the first hand, but were obliged to wait until we could obtain them from the public nurseries. After having succeeded in drawing his Lordship's attention to some of the lovely objects which we could at that time purchase, he entered into the thing with spirit; but here again we were stopped in our progress, by not being able to obtain more than two or three of a sort of the more rare kinds, and in some instances a solitary specimen only. I found it therefore necessary to turn my attention to the propagation of such plants in order to satisfy our craving desires for increased numbers, which at that time could not be supplied by nurserymen. As the propagation of such trees will be treated of in a subsequent chapter, I need only add here that to the successful propagation of such plants as were scarce, and the *great liberality* on the part of the Earl of Harrington in allowing me to purchase in considerable numbers, such as could be obtained, may be attributed our ability at a future period to work up with pictorial effect the different hues of evergreens with which the grounds at Elvaston Castle now abound. In order to gain time, and to make the most of the means within our reach, at all times we endeavoured to produce immediate effect by planting thickly; and as we extended our ground operations, we naturally took advantage of such plants as were getting too thick, and so kept producing new pictures; occasionally introducing in the fore and middle ground distances such objects as we found worthy of these situations.

Owing to the power we possessed of moving, at all seasons, trees of large dimensions (which will be treated of at length in another part of this work), we were enabled to accomplish frequently in a few weeks or months, what must otherwise have been the work of many years.

As the subjects which we had already treated increased in beauty and interest with the growth of the plants, our ideas of extent increased likewise; and when I found that his Lordship intended to proceed in the work, I suggested to him the propriety of suspending, in a great measure, our garden operations (strictly speaking), and turning our attention to the belts of deciduous trees which surrounded the grounds: as Elvaston at that time could only boast of its group of cedars of Lebanon. These belts consisted (as has been already observed) almost exclusively of young oak saplings, which under fifty years at least could have been of little value as timber; and likewise under or brushwood of no value.

These belts of plantation I was anxious to clear of brushwood, and all inferior and stunted specimens of trees, and to introduce pines and firs, such as Laricio, Austriaca, Spruce, and Silver firs.

My object was to secure shelter, and to form back grounds for trees of greater interest, which I had reason to believe would be afterwards introduced in these plantations, as is now the case. But in this I was not able to gain my point for several years, but at length, when my noble employer viewed the subject through the same medium as I had done, he frequently alluded to it with regret, adding, "Barron, had I taken your advice years ago, Elvaston would have been years in advance of what it now is in point of effect and value." The *weight* of this remark I wish not to be lost sight of. I conceive it to be of the greatest importance, not only on the score of shelter, but for effect and depth to pictorial views which may be produced afterwards, to plant thickly all back grounds as a *primary* operation, especially where a prospective view can be obtained of future proceedings.

ON THE

MANAGEMENT OF EVERGREENS,

&c.

CHAPTER I.

THE ADVANTAGES TO BE DERIVED FROM THE GENERAL ADOPTION OF MANY COMPARATIVELY NEW AND VALUABLE EVERGREEN TREES IN OUR ORNAMENTAL GROUNDS, PARKS, AND PLANTATIONS.

To the management of evergreen trees, I purpose to confine my remarks almost exclusively. Twenty-five or thirty years ago the variety of evergreen trees in this country, whether for useful or ornamental purposes, was very limited, and the scope for the planter so narrow, that to these circumstances may be attributed in a measure the almost universal jumble of ordinary-looking trees, that we find throughout the country, surrounding our dwellings—even from the palace to the cottage.

Around the mansions of the great and wealthy of our land, where something like pictorial effect is expected, it is seldom to be found; and especially that snugness and shelter indispensable to real comfort during the portion of the year when *most* wanted.

I would be the last to quarrel with the majestic ramifications of the king of the forest, or even some of his less stately attendants; neither would I be found disputing their value or uses, whether viewed as timber, or regarding the charms many of them give to our park scenery; and I have no wish to deny that even the stag's horn, or lifeless limb of an old oak in *certain localities*, forms an admirable subject for a painter.

I can likewise enter into and respect that venerable feeling, which holds sacred, and protects certain relics of our ancestors' planting; or those shady boughs underneath which friends were wont to meet, who cannot meet on earth again: nay more, I could almost plead for some, whose only beauty consists in once having been witnesses to the playful sports of our childhood. But I have little sympathy with the admirer of fields enclosed by stone walls, or soil embankments, simply because he has not been accustomed to look upon the beauty of hedges: nay, I pity the man, in these days of progress and improvement, who can fold his arms and either content himself with, or try to admire that which has neither beauty nor attraction. Notwithstanding for the last twenty years all the advantages of a horticultural press, and the strenuous and most successful exertions of botanical collectors (owing no doubt to the praiseworthy and spirited individuals who have sent them out at no small pecuniary risk), to enrich our shrubberies and plantations,—what is so common as to see, even at the present day, *close to our mansions*, such commonplace things as elms, ashes, sycamores, poplars, or any other rubbish that the nearest provincial nursery may happen to be overstocked with; all stuck in to produce either immediate, or lasting effect! The immediate effect I shall not describe, but some of the lasting ones are these,—a continued litter of decayed leaves during that period of the year when our gardens are expected to look their best; and an assemblage of leafless stems without either beauty of form or outline, and neither affording shelter nor protection from bleak winds for seven months in the year; a want of protection in winter and early spring; the absence of colour (being without leaves) during the same period; the constant litter from falling leaves during the late summer and autumn months; and the unwholesome effluvia arising from decaying leaves in autumn and winter,—form insuperable objections to deciduous trees being planted, or indifferent and uninteresting ones remaining, wherever grounds are intended to be highly kept, or where snugness or neatness are expected.

Passionately fond as I am of nearly all trees, yet I consider that not any tree should be planted without an object in view to justify that act: and to plant trees indiscriminately merely because they are trees, or are *thought* to be cheap, and can be easily obtained, is quite as absurd as building a house with any materials which may happen to be cheapest or most convenient, or planting an orchard of fruit trees, without any regard to the value of the fruit when grown.

All deciduous trees, then, should be so disposed of as to secure the greatest possible advantage from their beauties and uses; but should never be allowed to occupy the place of such as will be both more useful and ornamental in a shorter space of time.

Lest I should be thought to disparage the beauties or underrate the value of trees which we have hitherto been accustomed to look upon with much interest and pleasure, I must beg the indulgence of a simple picture to illustrate my meaning. When my friend asks me to look at his stable, you may imagine my disappointment at finding only a cow in it; or when he takes me to view his cow-shed, I find only some pigs there. If I have but *one* stall in my stable, and keep for only *one* horse, I think I can manage better than put a donkey in it. Well, then, at the risk of being roughly handled by some who do not view the landscape through the same medium, or choose the same point of sight that I do, I must be honest to confess that had I a place of my own to lay out, I should infinitely prefer planting it *exclusively* with *evergreens* wherever beauty or shelter was my motive for planting. By this means, I should secure the enjoyment of my grounds (in these points at least) for twelve months in the year instead of only a few months in summer. Whether we look at beauty of form or outline, from the formal Araucaria and fastigiate Junipers, to the wild grandeur of the pine, and even to the delicate, graceful, and flowing habits of the Cryptomeria Japonica, Funebral Cypress, Deodar Cedar, and Hemlock Spruce,—or size, from the gigantic Lambert and Bentham Pines, the Sequoia sempervirens, and Douglass Fir, towering their lofty heads a hundred feet above the pride of British forests, and producing huge trunks of timber—too large for British ears to listen to with credit—to the diminutive dimensions of the Siberian pine, Hudson, Clanbrasil, and pigmy firs;—or colour, from the deep sombre tone of the common and Irish yews, the glaucous and silvery in the Sabine Pine, P. nivea, and Deodar Cedar, and to the warm and yellow greens in Pinus insignis, and others, even to the rich yellow of the Golden Yew,—I say whether form, size, texture, or colour be the object desired, we have now an abundant supply of materials to paint a scene to our taste; and if shelter be desired (and what more desirable in our climate?) then we have it in the dense and impenetrable masses of our evergreens, affording, at the same time, a play of light and shade peculiar to themselves. Such as have an organisation giving a taste for the sublime and beautiful, will here find a wild range affording scope alike for the genius of the planter and painter;

and I am sanguine enough to believe that the time is not far distant when, with all who can lay claim to real taste in the laying out of our grounds and parks and improving our domains, it will be thought quite as incongruous to introduce many of the trees now planted, as it would be inadmissible to plant leeks or cabbages in our flower-gardens; and where the object to be attained is profit, certainly the trees which will secure the largest sum in a given time should be selected. A glance at many of our modern plantations will show that we are at fault in our choice. Look at the value of an oak sapling, and consider how long it has taken to attain to a marketable size! Again, let us compare the worth of ashes, beeches, elms, limes, and sycamores, of twenty or thirty years' growth, with several of our conifers of recent introduction, and we shall soon perceive the necessity of turning over a new leaf. Let not the thought deter us, that because these plants are of recent introduction they are therefore scarce, and that we must wait until they are plentiful and cheap. No: so long as there is little or no demand, that will, to a certain extent, be the case; but when once it is known that these things will be wanted, the enterprise of British nurserymen will soon supply them plentifully at a reasonable rate.

Even now, some of our nurseries are tolerably stocked with Cedrus Deodàra, Araucaria imbricata, Abies Douglasi, Pinus Laricio and Austriaca, &c. &c.,

all of which, so soon as the attention of the public can be arrested, and brought to bear on the subject, must supersede the ordinary groups which now surround our mansions, and occupy the chief places in our landscapes, and crowd our plantations to little purpose where profit is the object.

CHAPTER II.

ON THE PICTORIAL EFFECTS WHICH MAY BE PRODUCED BY JUDICIOUS ARRANGEMENT IN PLANTING WITH DUE ATTENTION TO THE SELECTION OF COLOURS OR GRADATIONS OF TINT, AMONGST THE DIFFERENT VARIETIES OF EVERGREENS.

To the landscape gardener and those who study pictorial effect in the arrangement of trees, the ample means now within the reach of British planters are calculated to afford scope for the most fertile imagination, and to produce effects hitherto unknown in the history of gardening. The great variety of form, size, and colour now to be found amongst the hardy evergreens which have been brought together from every temperate region in the universe, and centered in this focus or mart of nations, and attainable in our public nurseries, calls aloud to every proprietor of land who can devote a portion of his property to the introduction of beautiful and valuable trees to make an effort in proportion to his means towards enriching and beautifying our highly favoured island, and rendering it still more favoured in the sight of nations.

As British skill, industry, and enterprise, have contributed so much to our national wealth, and given us the first place in the scale of nations, and a position in the arts and sciences calling forth the wonder and admiration of the world, the landed proprietors of our country ought not to be behind in embracing such means as are within their reach, to enhance the value of their estates, and to afford pleasure and comfort, not only to themselves and their dependants, but to all who feel a national interest in our country. The Divine Author of our being has so constituted us, even in our present state of existence, as to be capable of high enjoyments, the security of which, however, greatly depends upon our knowledge and fulfilment of the natural laws by which the whole is governed. The capacity of individuals for deriving enjoyment from the natural objects which surround them, is exactly proportioned to the organisation or structural development peculiar to each. For example, we all possess in a greater or less degree a certain amount of pleasure in looking on beautiful forms; the size, also, of an object excites our admiration, whenever that size exceeds the limits of objects of the same kind, with which we are familiar, and even in some cases, when it is reversed, and becomes a pigmy or dwarf.

Besides the size and form of objects, the texture also of bodies has its claim upon our observation, and the delicacy or strength of each variety affords pleasure as it possesses that property in a striking degree. Again, colour has its peculiar attraction, the enjoyment of which is well known to most, especially the ladies, who, generally speaking, possess a power of discrimination beyond the other sex in the contemplation of colour; hence their increased enjoyment from the exercise of that organ.

Being then differently constituted, our tastes and enjoyments will be as varied as the proportionate capacity of each individual differs one from another; and the power of mind in each individual for forming a correct estimate of the form, size, proportion, texture and colour of natural objects, depends on the proportion of each of those capacities of the mind, and the due cultivation of the same.

Wherever a preponderance exists, that faculty will be exercised more than the others; hence a predilection in favour of such objects as can gratify that organ, and the enjoyment which some persons have when looking on natural objects (whether the subject of contemplation be form, size, texture, or colour, or a combination of them) is of an order to which others are utter strangers; but we all possess these powers in a greater or less degree, which when duly exercised with the reflective faculties of our mind, our enjoyment may, and doubtless will be, much increased, as we become familiarised with the many lovely, graceful and majestic trees now in this country, but of which little is known, except comparatively to a few.

In a former chapter it has been observed, that no tree should be planted without a reasonable motive for it. From amongst the orders of plants already named, may be selected suitable materials for composing the most enchanting landscapes, varying in dimensions from a rood to hundreds of acres.

When a single tree is selected to stand alone, it should possess sufficient attraction in form, size, texture or colour, to recommend it to our notice, and when several or all of these properties are combined in the same tree, it then becomes an object of the deepest interest. For example, a Deodar Cedar is worthy of any situation, and must ever inspire a contemplative mind with the most pleasing emotions, whether we regard its elegance of form in a young state, its majestic grandeur and dignified limbs when it reaches to 150 feet in height, or its heavy masses of plume-like glaucous foliage, giving a play of light and shade, forming at once a picture in itself. From the constitution or structure of our minds it will ever follow that a combination of parts, or a scene which affords a variety, will be the most pleasing. One picture may be admired for the beautiful forms which it contains, another for the gigantic or diminutive dimensions of its objects, a third for the delicacy of texture, and a fourth for the brilliancy or harmony of colour; but one in which *all can be found* will give much more pleasure to the beholder than all four when viewed separately. This shows the reasonableness of grouping plants so as to produce the most pleasing effects.

This principle to a certain extent has been recognised in the flower-garden, but seldom, if ever, in the landscape.

Acting in accordance, then, with the foregoing observations, it will hence follow that variety must be introduced.

The style of gardening adopted at any place will naturally dictate the kinds of plants which ought to be used to accomplish the desired end, and more especially their arrangement. As the beauties of natural objects can only be fully realised when viewed in the most favourable lights, and in connexion with surrounding objects which have a tendency to set them off to advantage, so a pleasing contrast will be found in a warm against a cold green, or by reversing their relative positions. In some instances, a gradation of tints will be pleasing where contrast of form can be brought to bear, as a weeping, against an erect growing plant, or one which is stiff and formal, against that which is graceful and flowing. Again, the natural sizes of full-grown plants, and the space of ground to be operated upon, will have much to do in determining the selection of kinds, and arrangement necessary. When sufficient space can be allowed for the full development of the character peculiar to each plant, it is desirable that that end should be gained, but in certain situations and styles of gardening, this cannot be accomplished, without sacrificing other features of much greater importance.

I am aware that certain prejudices exist against any liberties being taken to alter the natural growth of trees, and even absurd opinions have been advanced, to the effect that coniferous or resinous trees cannot be cut or pruned, but at the risk of being seriously injured. Now the style of gardening which has been adopted at Elvaston, and the lengthened practice which I have had, enable me to state, without fear of contradiction, that nearly every kind of coniferous tree will yield to art, at the discretion of the operator; and dame Nature will find no fault, if her rules be properly attended to.

Prejudice can never be based on truth, and where a strong love for, and anxious inquiry after that principle do not form the main spring of action, the self-will of the human mind naturally objects to, and opposes what is new; and suspects, as wrong, that which seems at variance with what we have been accustomed to look upon.

As few in the present day could be found to object to beautifully trained fruit trees, because opposed to the natural form which those trees take in the orchard, when left to themselves, neither can it be reasonable to object to art being applied to alter the forms and habits of ornamental trees, in the garden or landscape, to suit certain styles of artistic gardening.

Much may be done then in improving the growth and forms of many lovely trees, when Nature and art harmonise and co-operate. The advantage which has been taken of this in the gardens at Elvaston Castle has given them a character at once unique and new.

The number of large Yew trees which have been brought together from various parts of the surrounding country, and the immense number of smaller ones, which have been had from nurseries, have given the most favourable backgrounds to trees of opposite colours, as Golden Yews, Irish Yews, and variegated white Cedars, Irish, Swedish, Chinese, and other Junipers.

Again, the Cedrus deodara and Abies Douglasi, are worked up in contrast, also the Abies Douglasi and common Yew, to great advantage.

Pictures are formed of variegated white Cedars for a foreground, and Irish Yew for a background; glaucous and neutral-tinted Junipers, as the Chinese and Virginian with Irish Yew.

Again, the warm Pomona green of Pinus insignis, and Cupressus macrocarpa, are contrasted with the deep black green of the Irish Yew, and likewise with the cold retiring Pinus Sabiniana, and again these warm colours with the glaucous tone of Cedrus deodara.

The richest effects can be produced by grouping on grass, deep shady tints of Cembran Pine with the brilliant hue of the best variety of golden Holly and the warm yellow green of Chinese Arborvitæ, with a background of common Yew, or Cedar of Lebanon. The only admissible deciduous trees among evergreens in the background, are the purple Beech, which can be brought in occasionally with admirable effect; and a variegated Spanish Chesnut may sometimes be taken advantage of; though with some there exists a prejudice against all variegated plants, arising from the absurd notion that they are diseased; but the disease is more in the brain indulging such a fancy, than in the plants.

Variegated Pinasters, Savins, Hollies, and others already named, and indeed nearly every evergreen possessing a distinct and permanent variegation, is of incalculable value in landscape decoration.

All variegations raised from seed are permanent, and hence of the greatest value.

In decorating the gardens at Elvaston, some plants well known and found singly in our gardens have been worked up upon a large scale, and with remarkable effect. Where a wild grandeur is wanted, connecting what is refined with its opposite, the common Savin, in masses, surpasses everything else. This plant, with large tufts or patches of hardy heath, on little hillocks in the foreground, broken with Juniperus Sabina variegata, or tamariscifolia, with occasionally a golden or Irish Yew, or Glaucus, erect, or weeping Juniper, and the background of Hemlock, Spruce, Deodar Cedar, Douglas Fir, or Pinus Insignis, will produce a picture which must be seen to be understood.

With Junipers near rock work and water, few plants are so effective as the Lavender Cotton (*Santolina Chamæcyparissus*), and Sea Ragwort (*Cineraria maritima*): the greyish green of the former, and silvery white of the latter, produce the most striking effects when properly dispersed with plants of opposite tints.

As plants to give depth to pieces of water and rocky scenes, none can be named with the common and Irish Yews; and for such places, plants of the most striking forms and colours should be chosen, and so arranged as to give the greatest possible depth even to the smallest spaces.

Near water, where the plants are sufficiently raised to have their roots unaffected by the water, the glaucous varieties of Virginian Cedar, and male recurved Juniper, which is also glaucous, are very propitious; when planted against the Yew, where the space is sufficiently extensive, such trees as Abies Douglasi, Cedrus Deodara, Pinus Sabiniana, and Macrocarpa, ought to be chosen for a background. Araucaria imbricata is most appropriate for rocky scenes; also the Cembran Pine and Hemlock Spruce, especially near water.

The foregoing remarks are given as fundamental principles, subject to modifications which must depend on local circumstances, which, when turned to account and made the most of, will produce results, proportioned to the taste and skill of the planter, and the means at his disposal.

CHAPTER III.

ON TRANSPLANTING LARGE TREES—WHAT LED TO IT AT ELVASTON CASTLE—HOW ACCOMPLISHED, AND WITH WHAT SUCCESS—HOW FAR JUSTIFIABLE TO BE FOLLOWED.

Transplanting large trees has been practised to a limited extent, at different periods, and with varied success. The object of their removal, generally, has been to produce an effect in a short time which must otherwise have been the work of years; or to preserve large specimens, which were interesting in a botanical point of view. Sir Henry Stewart, and others, may be instanced as successful experimentalists of the former, and the late Curator of the Botanical Gardens, Edinburgh, (Mr. Mc Nabb), of the latter. At Elvaston Castle, for a longer period of time consecutively, and to a much greater extent than elsewhere, the removal of large trees has been practised at all seasons of the year, and with a degree of success with which the public is already acquainted through the medium of the "Gardener's Chronicle;" and here it may not be uninteresting to give a brief outline of what led to the adoption of it at Elvaston.

When I first entered the employment of the late Earl of Harrington, in August, 1830, his lordship, then having been about ten months in possession of his estates, had three Cedars of Lebanon, varying in height from 28 to 35 feet, and the diameter of their branches from 25 to 30 feet, with trunks varying from 3 to 4 feet in circumference, which trees he was anxious to have removed, upon Sir Henry Stewart's plan,—the basis of which is, to prepare the roots two years previously to removal by cutting a trench round, and severing all the roots, confining them within a given circle; the trench being then filled up with good soil, the roots are allowed two years to enter it, and to produce a host of rootlets, thereby ensuring as far as practicable, the safe removal of the tree. The trees above-named were accordingly thus prepared, in August, 1830, and two months afterwards, I was given to understand they must be moved the following February! This startled me, and cost me some thought; and the more I reflected the more apparent were the defects of that system. Soon I saw that many persons might be inclined to move large trees, if the thing could be accomplished at *once* with a justifiable prospect of success; but when told that they must wait *two* years before their favourite scheme could be put in operation, in the majority of cases it would be abandoned. And, again, that system had only been applied to deciduous trees, which were removed when dormant, and could be carried with their stems in a horizontal position by having them lashed to the pole of the two-wheeled janker, or machine, and so conveyed to their place of destination; but I saw the utter impossibility of thus treating the wide-spreading, horizontal, and brittle branches of Cedars of Lebanon, of the magnitude described, which if mutilated or broken, would not be worth removal. Again, in looking at the roots, and considering that they must be freed from soil, and knowing their brittle nature also, the whole concurred to convince me that another system must be adopted, if the trees must be removed. In pointing out to my noble employer the utter impossibility of accomplishing his object upon Sir Henry Stewart's system, and witnessing his disappointment, and being anxious to relieve it, I told him that if he would risk his trees, and would support me in forming a system that would answer, I would risk my character, which was all that I could afford, along with them, and would attempt their removal in February, as he wished; this he readily agreed to. The thought occurred to me that if it were possible to remove a tree with a large mass of earth, something similar to that containing the roots, after Sir Henry Stewart's preparation, I should be stealing a march upon him, and be as forward at once as he would be in two years. I then set about conquering the mechanical difficulty, which when once accomplished, I saw that success would be certain; and many of those mystified physiological difficulties removed, to which Sir Henry Stewart seemed to attach so much importance; and which if not properly understood would result in failure. I should have been glad to have brought to bear upon the undertaking which I had encountered, any portion of Sir Henry's system, but this I found impracticable. In order then to surmount the two chief difficulties which presented themselves, namely, the removal of the tree with a large unbroken mass of earth adhering to the roots, and maintaining the trunk in a vertical position, I saw that a four-wheeled carriage would be necessary. I then availed myself of such means as were within my reach; and removing the centre pole from a timber carriage, and raising the bolsters, I fixed two strong poles, the ends resting on the two bolsters, and the tree (when all was prepared to be lifted) was raised by means of an immense lever, the tree standing erect between the poles. A frame-work of wood having been previously formed under the tree (as will be hereafter explained by figs. 2 and 3) upon which the whole rested, and by means of the lever and strong chains, the entire mass, when raised sufficiently high, was suspended from the poles by other strong chains, and the tree maintained in its upright position by the aid of Guy ropes. The carriage being braced together by ropes and chains, was then moved upon planks to the intended site, and the whole having been again lowered by means of the lever, the tree was planted. The two other trees were afterwards removed in the same manner; in all three cases the greatest possible care being taken with the roots, and as each tree was planted, a thorough soaking of water was given. All succeeded beyond my most sanguine expectations; all three were transplanted in February, 1831: their dimensions then were, and now are, as follows:—

Height of trees in 1831.	Circumference of trunks in 1831.	Height of same trees Feb. 1852.	Circumference of trunks in 1852.
28 feet.	4 feet.	46 feet.	6 feet 1 in.
32 feet.	3 feet.	55 feet 6 in.	6 feet 3 in.
35 feet.	3 feet.	58 feet 6 in.	6 feet.

The success which attended these operations led to a bolder attempt the following November. A large Cedar of Lebanon, measuring in height 33 feet, diameter of branches 48 feet, and circumference of stem one foot from the ground 6 feet, being in the way of the groundwork operations, where a flower garden was being formed, its removal was agreed on; the whole operation being conducted similarly to that described, with this difference, that the carriage was drawn by horses instead of men; and here I found the difficulty of a make-shift apparatus; however, after a good deal of scheming and anxiety, I succeeded in removing this tree also between two and three hundred yards, to the place intended for it; and with due attention to both branch and root watering the following summer, the result was satisfactory, as its comparative dimensions now show:—

Height Nov. 1831.	Circumference of stem, 1831.	Height in Feb. 1852.	Circumference of stem, 1852.
33 feet.	6 feet.	44 feet.	7 feet 10 in.

As Elvaston Castle could not at that time boast either of its gardens or evergreens, with the exception of a group of Cedars of Lebanon, surrounding the castle (in number twenty-three), his lordship became very anxious to add to his grounds such large evergreens as were attainable, either for ornament or shelter; and the success which had attended the undertakings before-named had opened to us a wide field of operation, and a determination was now formed to enrich the grounds at Elvaston, by collecting together such large evergreens as could be found on his lordship's estate or could be purchased in the neighbourhood. This being the case, I was once more compelled to become a mechanic and contrive a more efficient apparatus. A ponderous machine was now constructed, consisting of two strong oak beams trussed with iron rods twenty-one feet long, forming the bearers from bolster to bolster; braced together with iron stays; allowing the carriage to have as much lock as possible; the whole fitted together with bolts and nuts, which, in a few minutes, could be taken to pieces at any part; separating the front and hind wheels in order to place the carriage with the greatest facility in a proper position for the tree being placed upon it.

Cut No. 1 will fully explain the large machine and its use.

A tree being about to be lifted, say from 40 to 50 feet high, the diameter of branches being of the same dimensions; the groundwork operations would commence on the outside of a circle of from 20 to 25 feet in diameter, more or less, judging, from the kind of tree, how far the roots would extend horizontally; the soil would be then cleared from the roots, carefully preserving every fibre as far as practicable up to within a given space of the stem, where the remaining mass of earth

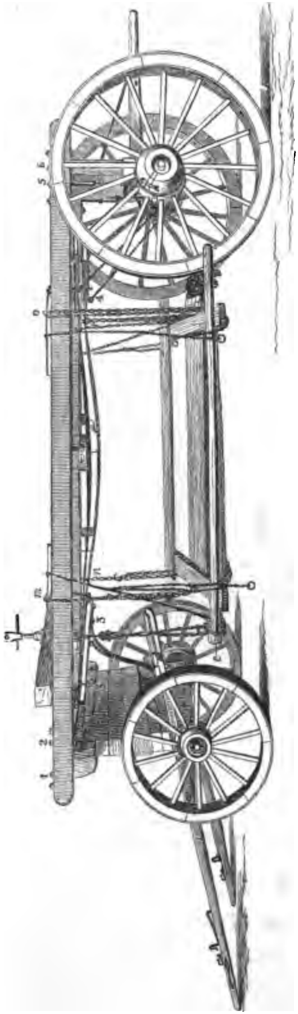


Fig. 1.

Large Machine, showing the platform upon which the tree rests suspended, the same as when the tree is upon it; and the screw-jack (by which the whole is raised) attached in front.

and roots must be left undisturbed, as shown in fig. 2, forming a parallelogram, say 9 ft. 6 in. by 8 ft., thus: the line *e f* running in the direction in which the tree is to be taken out from the place where it stands. A channel is then excavated about 2 ft. square, in the direction of the line *e f*, as shown at *e*: this being done, two strong poles (of ash, oak, or Spanish

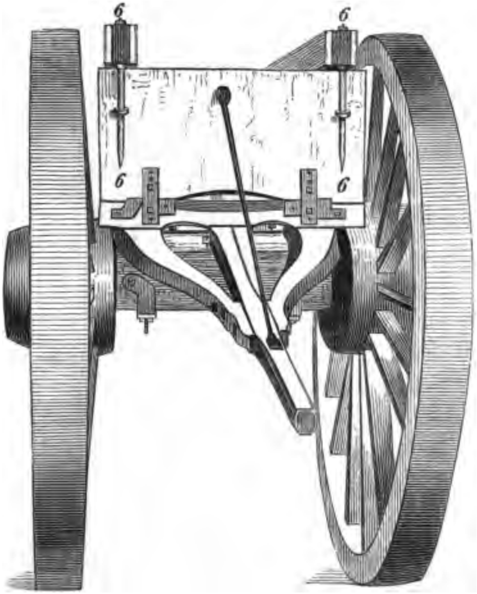


Fig. 1, A.

Showing hinder part of large machine: the short pole and spurs behind serve to steady the bolster and wheels when detached from the beams; and also to attach horses to, when required to be drawn backwards.

chesnut), of equal thickness, are then passed under the centre of the tree, and on them a strong 3-inch ash or oak plank, 20 or 22 inches wide, hooped at the ends to prevent it from splitting; a strong chain is then laid under the poles at each end, as shown at *e f*, on suspended platform attached to large machine,

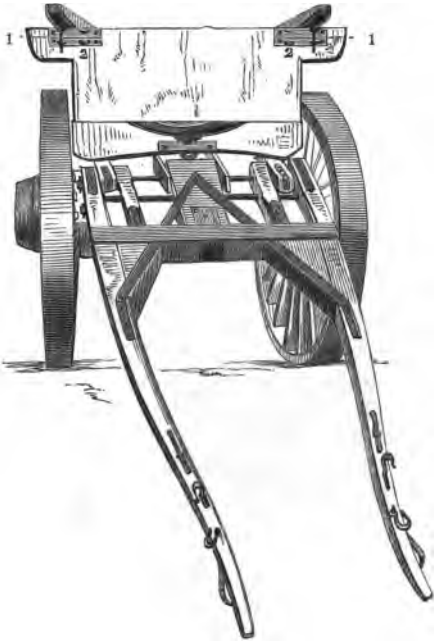


Fig. 1, B.
Shows the fore-wheels and bolster, with shafts constructed so as to give the greatest degree of strength, being without mortice and tenon.

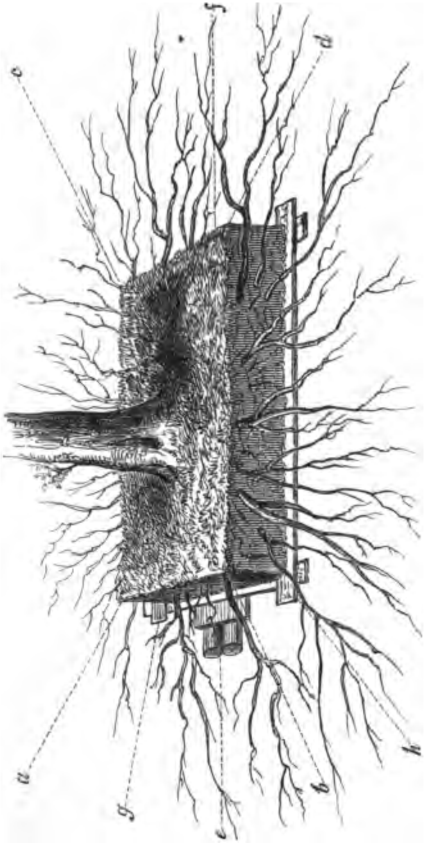


Fig. 2.

by which the whole mass can be raised by a screw-jack. The poles and plank being placed as directed, are raised at each end, so that the plank may touch the roof of the excavated trench *e f*; that being done, a shallow excavation is then made at each end, to receive a 3-inch end plank with bevelled edge, resting upon the centre plank from A to B and from C to D in fig. 3. Two similar excavations must then be made to receive side planks with bevelled edges, these resting upon the end planks from A to C and from B to D, as shown in the diagram; some litter must then be stuffed firmly in, between the planks and the soil, with a spade, by which means every part will stand to its bearing when raised up. Guy-ropes should be fastened to the stem of the tree as high as to be safe.

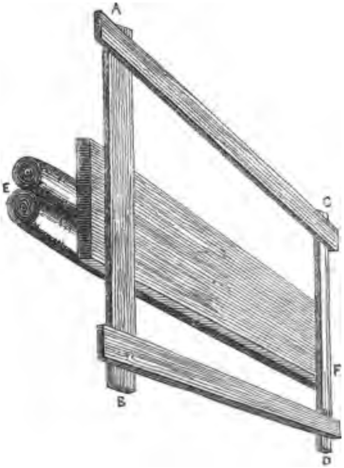
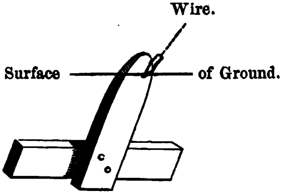


Fig. 3.

The tree being now fixed on the frame-work, the carriage is put to it, and the whole raised by the screw-jack, and suspended in chains sufficiently high for travelling. Ten chains are required—six *very* strong; the links being $\frac{7}{8}$-inch iron. Each of the chains must have a strong ring at one end, and a hook at the other; two of these are termed lifting chains, one at each end of the poles for the screw-jack to lift by; the other four strong chains are termed sling chains, and are placed on the beams of the carriage at *m*, *n*, *o*, *p*, of large machine.

When the tree is raised at one end, the two sling chains are hooked into each other under the poles at *e*, then the four smaller or corner chains are placed on the beams, the same as the sling chains at *m*, *n*, *o*, *p*. The end of the poles *e* being raised, the corner chain is then fastened round the ends of planks at *g*, *h*, fig. 2; the poles at *f* must now be raised, and the sling and corner chains fastened, as at the other end. Two screw-jacks have been tried, one at each end, which at first sight might appear to expedite the operation, but this is not the case; as it is necessary for the corner chains to be fast at one end, whilst being raised in order to keep the tree in an upright position. In the majority of cases (except where the tree is very tall, or top-heavy, or the ground uneven over which the carriage has to pass,) it will be found that the weight of the immense mass of earth when properly balanced in loading, and the corner chains all properly fastened, will be sufficient ballast for maintaining the tree in an upright position; and that the guy-ropes are seldom used, except when the tree is loading or unloading. The cuts and explanations given will be found sufficient for any one of ordinary mechanical tact, to conduct the operations. Now with regard to planting large trees, I found on reflection, that instead of going to a great expense, in preparing pits as directed by Sir Henry Stewart, much advantage would be gained in every way by placing the tree on the *surface* of the ground and by adding soil for the roots to be planted in. By this means the roots instead of being cramped in a pit, and arriving speedily at the sub-soil, have the depth of the natural soil to sport in, besides the free access of the air (so essential) being also secured. The trees when planted have, on this plan, the appearance of being placed on raised bases, and in this way, height is gained. All the previous preparation then required, is to see that the surface soil is properly loosened up and a trench cut in the centre in the direction of *e f*, to receive the poles and centre plank, when the tree and mass of earth adhering to the roots are lowered to the surface of the ground. The tree now resting on the surface, taking care that it is perpendicular, the carriage may be taken to pieces and removed; this being done, the poles and centre plank must be drawn out, and the trench filled up with soil, being careful that no space is left between the soil and roots. The two end planks now must be removed, by taking away the soil upon which they rest, and letting them *drop down*: and the side planks in like manner.

Great attention must be paid to this, as the ball would be very much broken and the roots injured, by forcibly drawing the end and side planks outwards. In all these operations the greatest possible care must be taken to prevent the roots which protrude beyond the ball of earth from being either broken or barked: all the planks being removed, the soil must be speedily put in, where they have come out, lest the ball should crack in any direction: sufficient soil should now be added for all exposed roots to be carefully planted in their proper position. All this having been attended to, a thorough soaking of water must be given, sufficient to saturate every particle of soil which has been moved with the tree; and also to fill up every crevice with fresh soil around the roots which have been exposed; and at every subsequent watering (which should be repeated a few times during the summer) particular attention should be paid to the ball of earth which was removed with the tree; taking care that it be *saturated* to the bottom of the roots. During dry weather a little short grass or litter laid over the surface, will prevent evaporation, and thereby keep the roots moist. If the whole operation have been properly conducted, and the mass of earth adhering to the roots maintained unbroken, unless the tree be very tall or top-heavy, or placed in an exposed situation, no fastening will be required; but should that be deemed necessary, a collar, not too tight, should be placed as high upon the stem as it will bear; in the event of a violent wind, of course the higher up, the more power is gained over the tree. To this collar are fastened three iron wires of sufficient strength to resist the action of the wind; these wires are fastened at bottom to pieces of wood let into the ground, being previously prepared with well-boiled gas tar, which preparation will preserve them for several years; consequently they can be used for different trees in succession, as it will seldom be found necessary to let the wires remain on one tree more than a season or two at furthest. The pieces of wood may consist of tops or roots of trees, knotty or bended branches such as are unfit for any other purpose (except firewood), and where such pieces are not attainable, a piece may be nailed across, as shown in accompanying diagram, which will give it a much better hold of the ground.



In order to save time, I found it necessary to construct another machine for moving trees of a smaller size, as the number of men for working the large one could not be less than eight; and the same process in every respect having to be gone through when moving a small tree, as when moving a large one. The second machine being of very different construction, the accompanying sketches will explain it.

In preparing a tree to be removed by the smaller planting machine, a wooden framework of smaller dimensions, varying in size according to the tree, is placed underneath, the same as for a large tree, with the exception of centre poles being unnecessary, as a three or four inch oak plank, when free from knots, will be found sufficient to carry a tree from one to two tons weight. By this machine, when the tree is ready for being

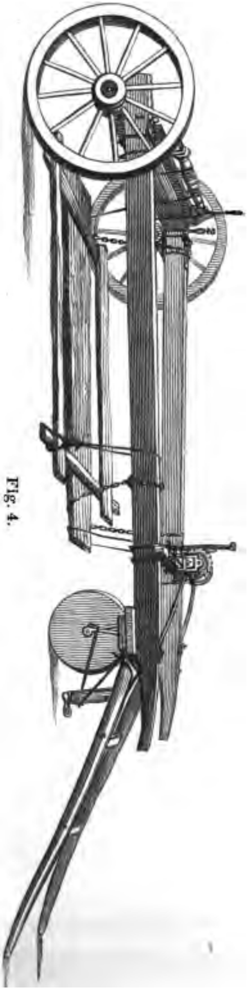
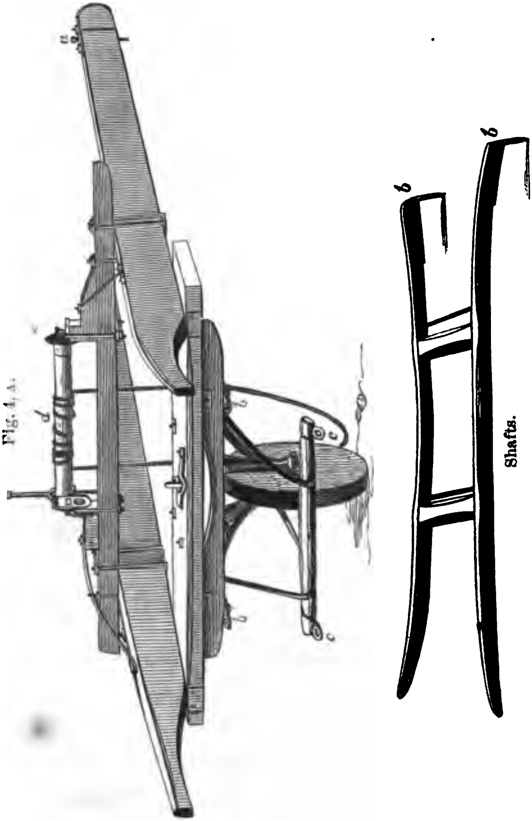


Fig. 4.

Shows three-wheeled small machine with windlass and lever for raising the tree when placed upon platform, the same as for large machine.

lifted, it can be raised in a few minutes by the

Fig. 4, A.



Shows fore-part of small machine when detached from hinder part: *a*, drop pins which fasten it to hinder part; *b b*, where shafts are attached for a man to guide fore wheel; and *c c*, where the chains are hooked when drawn by a horse.

windlass at each end, and when taken to the place of destination, it can be lowered from it in the same short space of time. This machine is generally worked by one or two horses, and if the distance be short, the plant is removed by hand power alone.

And for convenience, a two-wheeled truck, as shown in accompanying sketch, has been used for plants of a still smaller size. In all cases as much soil as was consistent with the sizes of the plants and roots has been removed with each plant; as upon *this mainly* *depends* the success of removal. By adhering to the foregoing instructions, plants may be removed (as they have been at Elvaston) every month in the year, and with almost uniform success; although spring, summer, and autumn planting is to be preferred to winter, for this reason:—When plants are moved in a growing state, the moisture surrounding the roots is immediately absorbed, and at once assimilated, as food for the plant;

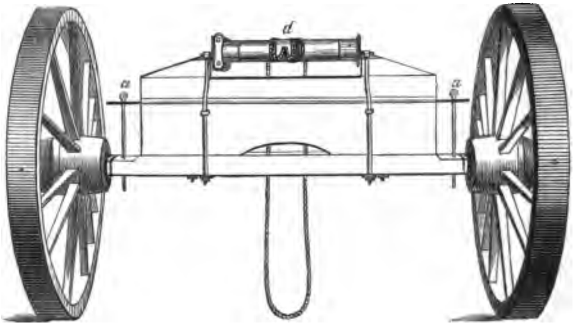


Fig. 4, B.
Hinder part of small machine: *a a*, drop pins for attaching side bearers, as shown at 1, 2 in fig. 4; *d*, windlass and lifting rope.

the wounds where the plants have been cut across or injured, speedily heal over, and fresh rootlets form; all going on in a natural process, without much apparent check; but in winter, when the ground is cold, and the plant in a dormant state, the moisture which surrounds the roots, instead of being taken up by the plant, remains there in a state of inactivity, and has more or less a tendency to rot and decompose certain portions of the roots where severed. Hitherto the planting of trees has been confined to that period of the year when they have ceased growing, and are in an inactive state; and had not necessity compelled me to step out of the ordinary track, I might still have been in the dark as to what can be done successfully. Had I not ventured on some bold experiments, and prosecuted my work at all seasons, but waited for the usual time of planting, in sixty years we could not have accomplished what has been done in twenty.

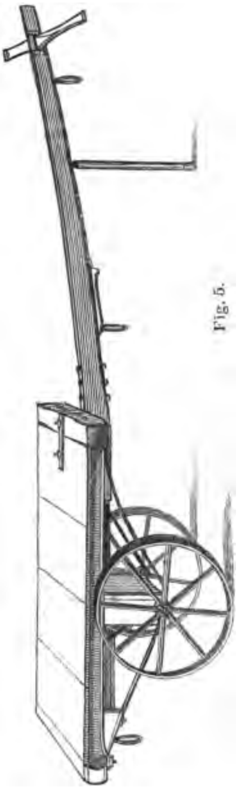


Fig. 5.

Trees of large size have been moved in the middle of summer, during hot weather, with perfect safety; and I find that when an operation can be performed under favourable circumstances, the more active the state of the plant is at the time of removal, the better it will succeed. We have moved Spruce Firs in June, from thirty to forty feet in height, when the leading shoots had grown from a foot to eighteen inches: and during the operation all the young shoots, even the leader, became flaccid and drooping; but after having been planted a day and well watered, all got right again, the leaders became erect, and prospered as if nothing had happened. It must be understood that summer planting is only applicable to evergreens, and such as can be depended upon for lifting *with large balls of earth.* It is possible, nevertheless, to transplant deciduous trees when in leaf, but *only* under peculiar circumstances should it be attempted. Whenever large trees are to be removed in numbers, the most efficient plan is to have a set of men, sufficient to work whatever machine is used, entirely for lifting, and another set for planting, as by this means no loss of time is incurred. As to what can be accomplished in a given space of time, much depends upon the distance the trees have to be removed, and the local difficulties to be encountered, but where no local difficulties present themselves, and the distance is moderate (say half a mile), three trees have been planted by the large machine in two days; and as many as six per day with

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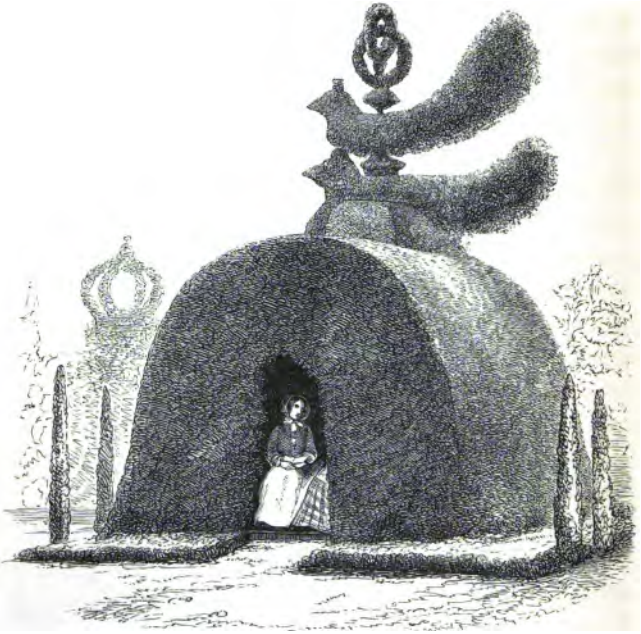

Fig. 6.

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the three-wheeled machine, when a sufficient number of hands have been engaged at both ends of the work. Some have attempted to show that large trees can be moved at a very moderate rate: this may be the case, if simply removing trees be looked at; but where successful planting, preserving the beauty of the tree, and vigorous after-growth are considered, it will be found to involve considerable expense. Circumstances being so varied in regard to locality, the expenses attending the removal of each tree will be found to vary, in proportion to the difficulties or facilities presented; but some idea may be formed from the statement that eight men and five or six horses have been sent several miles, starting early in the morning, and have brought a large tree home in the evening of the same day, without any previous preparation having been given to the tree: some Yew trees have been brought to Elvaston Castle from considerable distances, possessing deep interest from their great age, or peculiarity of growth.

The following sketches will show a few which are interesting, some of which have been planted in June, July and August.

The old clipt yew tree (fig. 6) and the two following are given from among many, as specimens of large trees which have been removed. This arbor is now about 14 feet square and 18 feet high: it was brought twenty-five miles about eighteen years ago, and it is now upwards of one hundred years since it was planted in the garden from whence it was removed. It *is one tree.* The stem runs up the centre; and it is given as a specimen where several mechanical difficulties had to be conquered. After the tree was prepared for removal, with the platform under it, it was necessary to raise it sufficiently high to travel, before the trussed beams of the large machine could be passed through the branches. It could not be raised by the screw-jack in the usual way.

The wood-cut (fig. 7) shows a portion of the trunk of a yew tree supposed to be many centuries old; the trunk exhibits internally a very remarkable phenomenon, viz., a tree luxuriating and feeding upon its own decayed trunk. Probably forty or fifty years ago, the case or shell of living wood which surrounds the rotten stem had been induced, in consequence of a wet season or seasons, to push small rootlets where a portion of the new bark had come in contact with the decomposed trunk. These rootlets laid hold and grew, and now a host of roots, many of them thick, are forming a new stem within the old one. The dimensions of this tree are as follows:—Trunk at three feet from the ground, 7 feet 3 inches in circumference, height, 33 feet; and eleven feet from the ground the roots are formed which feed on the decayed trunk. This tree, though a mere shell, is perfectly healthy; it was brought to Elvaston, about thirteen years ago, upwards of ten miles.

The other engraving (fig. 8) represents the stem of

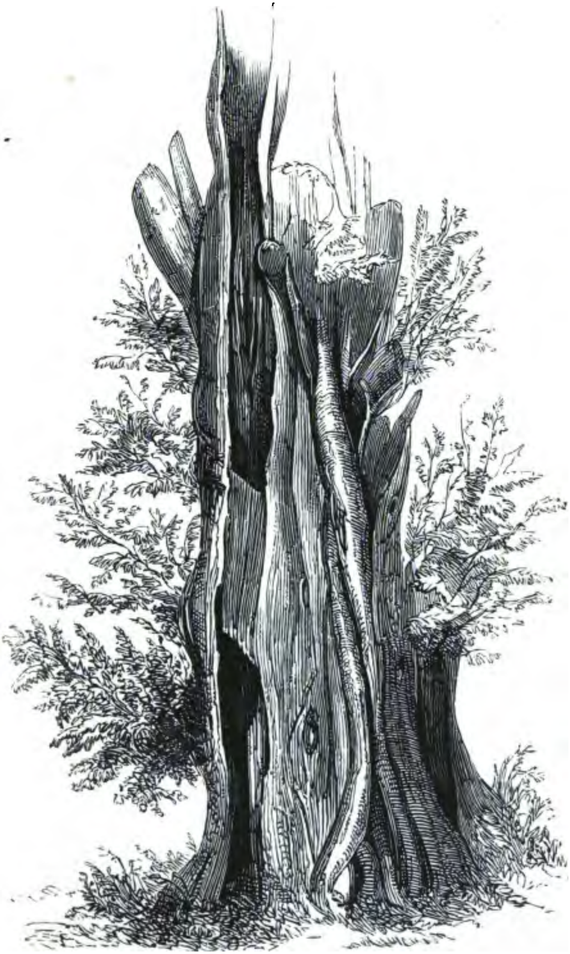

Fig. 7.

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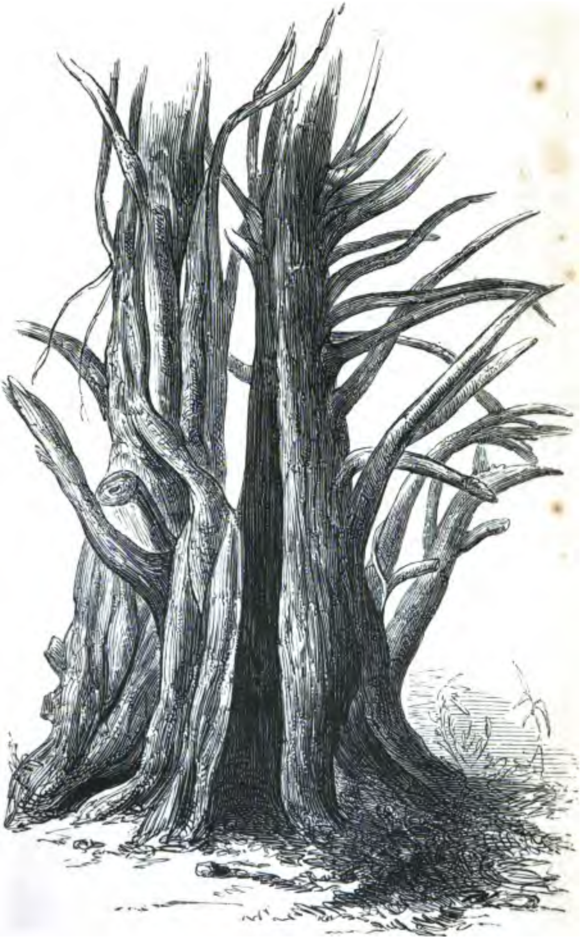

Fig. 8.

UNIV. OF MICH.

an old yew tree, which forms an arbour 14 feet 2 inches high, and 59 feet 9 inches in circumference. The person of whom it was purchased has in his possession family writings which proved it to be upwards of three hundred years old before its removal to Elvaston, now twelve years ago. The circumference of the trunk is 7 feet 4 inches. This tree was brought twelve miles.

It is not likely that the transplanting of very large trees will ever become general; only the removal of trees of singular beauty or interest, or some considerable local advantage to be derived therefrom, can justify the attempt. But this will not be the case with trees of moderate size, particularly as the planting of rare and valuable trees becomes more generally adopted. Most people prefer something like immediate effect, to waiting some years for it: and that can only be accomplished by planting thickly at first; as trees increase in size, and their individual peculiarities become developed, it will be found that some are deserving of better places than where originally planted, and that very considerable improvements may be effected, which no human foresight or sagacity could have anticipated; and only by the removal of such trees can the desired end be gained. Many can see what would constitute great improvements in their grounds, and would willingly embark in them could they calculate with any degree of certainty on the successful transplanting of their favourite specimens;

but from want of that knowledge, are deterred from any attempt. The removal of this difficulty has induced me to be so particular, and to dwell at such length on this subject; and should I have succeeded in conveying my ideas so as to enable others to carry out what has been so successfully practised at Elvaston, the desired end will be answered.

Many people are afraid to interfere with a plant, however ill it may be situated, simply because it is a rare or valuable specimen; and hitherto the Coniferous or pine tribe has been considered a difficult family to deal with; but for the encouragement of such, I may here state, that the most valuable specimens of that order have been transplanted of a *large size*, quite as successfully as plants of much less value.

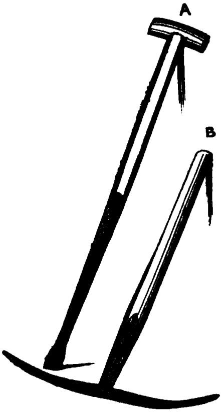

Fig. 9.—A, drill; B, small pick.

The only implements not in common use, which we have for excavating under, and preparing our trees for removal, are shown in this sketch.

CHAPTER IV.

EVILS ARISING FROM THE POT-CULTURE OF SUCH PLANTS AS SHOULD ULTIMATELY BECOME TREES; DEMONSTRATED BY WOOD-CUTS, SHOWING SECTIONS OF VALUABLE TREES WHICH HAVE PERISHED THROUGH THIS PRACTICE, AND A BETTER SYSTEM POINTED OUT.

BEING a man of rather tranquil disposition, and wishing at all times to avoid collision with the opinions of others, I would willingly have passed over the following remarks, did not truth and the importance of the subject demand that I should make a bold stand against existing prejudices and mal-practices.

The evils about to be complained of, from whatever cause they may arise, are of fearful magnitude, and with the exception of a few practical men, are so deeply rooted, that to turn the tide of public opinion in the right direction will be no easy task; nevertheless, I shall make the attempt, and I feel convinced that fair statements borne out by incontrovertible facts, will in due time have their proper weight. It is not for me now to inquire with whom the evil originated, or to whom its continuance may be attributed, but certain it is that nearly all the purchasers of trees of value, prefer having them from the nurseries in pots; nay, I ought to have said, will not buy them at all unless they be in pots: this is clearly proved by the extra price given for trees in pots, and so long as purchasers are blind to their own interests, nurserymen will try to suit their customers. Now this is a great evil, and so long as it is continued, will lead to disastrous consequences with many rare and valuable trees: the mischief arising from this practice I shall endeavour to point out, and also the way in which it is to be remedied. Nearly all rare and valuable trees raised from seed are grown in pots, and it being to the interest of nurserymen to make the most of them in the shortest time, when they are ready for a shift from the first pot in which they have been grown, lest their growth should be in any way checked, the greatest care is taken not to break the ball, but to place it entire in the next pot: and so on in each successive potting; but whether the greatest injury arises in the first or second potting, scarcely one plant in a hundred that have come through my hands during the last twenty years, but have been more or less injured by having their roots coiled like a corkscrew, and interwoven one into another, in such a manner, as to render it impossible in many instances to extricate them, without endangering the life of the plant; and if planted in this state, which they generally are, ultimate failure will be the result, manifesting itself in a variety of ways, according to circumstances, some of which are as follow. Should the plant have been kept in a pot for several years previously to its being planted out in the open ground, it may have received a constitutional check; and a stunted dwarfish growth will be manifested, and in this way it may continue for many years, but will never become a nicely developed and healthy specimen; but should circumstances favour a more vigorous growth, which in many instances will be the case, if the plant be pretty well furnished with fibrous roots, and they be spread out from the ball and surrounded by good soil, the evil will be sooner apparent, and will show itself in one or other of the following ways, as in the plant being unable to support itself against wind, it will play about as if placed on a pivot, and should it be artificially supported for a few years, the time will arrive when a high wind will level it with the ground, and the following appearance will be presented by fig. 10 A.

This specimen, the original of which I have now by me, with others of a similar kind, is a section of Pinus Laricio, which was taken from a pot in 1836, then about two feet high, it was blown down in 1850, then measuring in height twenty-seven feet, the diameter of the stem where the section is shown is eleven inches and a half. It will be seen from the accompanying sketch that the main roots having been interwoven, they could not develope themselves, but bound one another as if a ligature had been fastened at that particular part, the root swelling beneath, and the stem above this part; but no natural union having taken place, and the solid or organised parts connecting the root and trunk, as shown in fig. 10 A, at *o o*, every other part being unorganised. Fig. 10 B

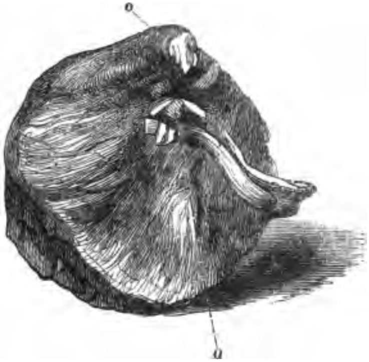

Fig. 10, A.

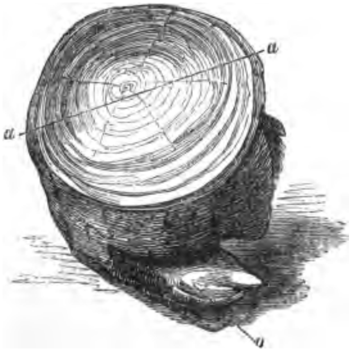

Fig. 10, B.

shows the same piece and section when cut across. Fig. 11 is a Cedar of Lebanon, 8 inches diameter,

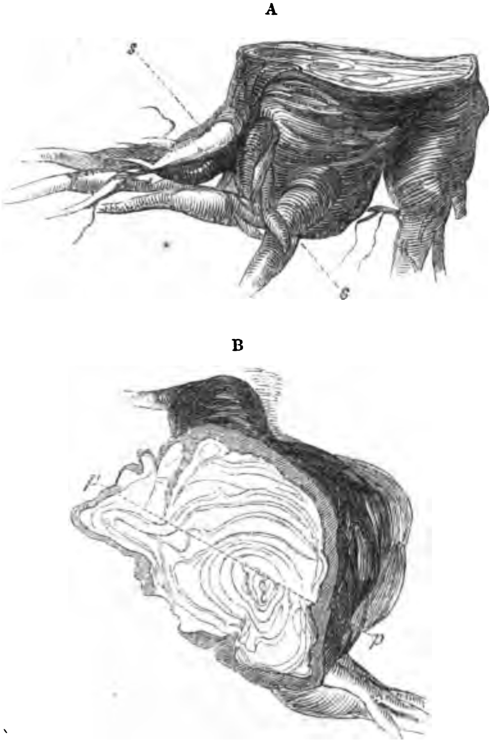

Fig. 11.

at B *p p*; at A *s s* the strangled roots are shown. In other cases as in fig. 11, plants will grow vigorously for a few years, but all at once, during hot weather, will receive a check and die in a few days, or may become sickly in appearance, and linger a year or two, but die they must. This arises from the great demand made upon the circulation of the sap during powerful solar action, all of which must naturally pass through the narrow compressed vessels of the main roots where they are strangling each other. The demand being then greater than the supply, the result of an almost immediate or lingering death is exactly proportioned to the length of time the demand is made, and the inadequacy of the supply of the roots to the demand made upon the branches. When first learning this lesson, I had the mortification to witness fine specimens of the cedar of Lebanon, which had been carefully nursed as pet plants for years in some of our principal nurseries, and purchased at high prices by my late lamented employer, flourish in favoured situations for a few years, and then go off in the way already described.

Fig. 12 is a remarkable specimen of a Cedar of Lebanon, A showing the section where cut across, and B the strangled roots. At A the rate of growth can be distinctly seen when the tree was in a pot. At B the three roots *o o o* which were not so much compressed by the others, formed the entire support of the tree; and just in proportion to their vigour, as seen at A. Ribs of wood were formed running up the stem, one (the largest) ultimately keeping the tree alive after all the others were dead, and so it continued to keep the tree alive until it was blown down.

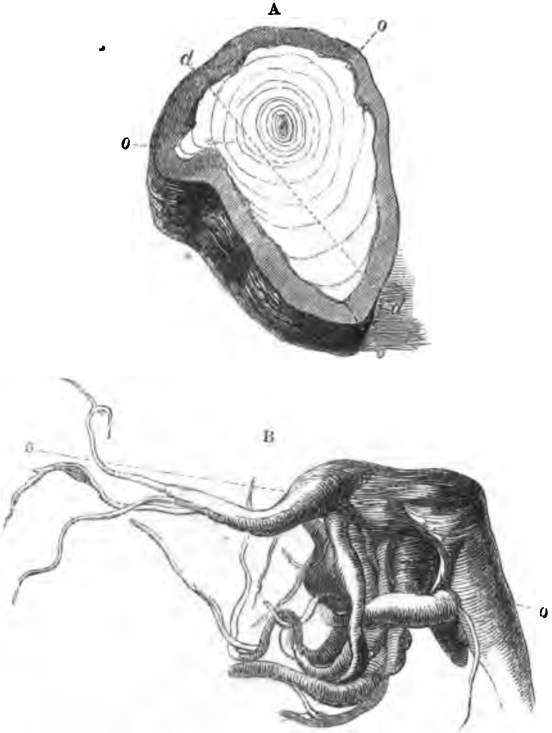

Fig. 12.

Fig. 13 (also a Cedar of Lebanon) A, top section, and B the roots of the same, is much like the preceding: the diameter *e e* being only 5 inches, and from *d* to *d*

9½ inches, being nearly double; this arises from all the central or dark part having been dead for some years,

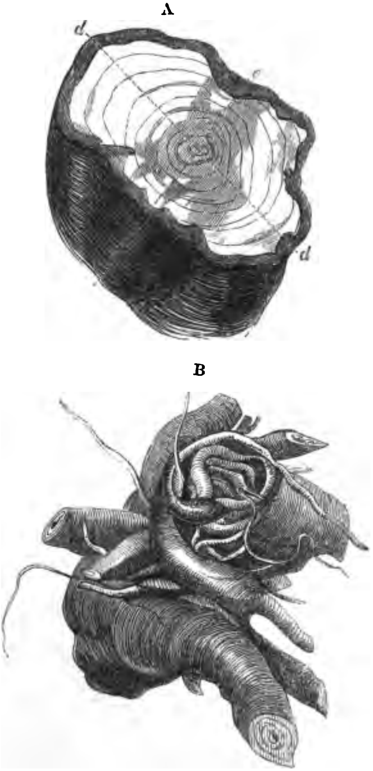

Fig. 13.

in the direction *e e*, whilst some of the roots less compressed continued to grow in the direction *d d*.

Fig. 14 A and B show top section and root of the same; here a very singular irregularity is exhibited; the very thin layers of wood on the concentric rings, show where the roots were compressed, and the thick portions where they were at liberty to circulate. At N the stunted growths are shown whilst the tree was *in a pot*, and at *o o o*, where the roots continued to swell after the other parts were dead.

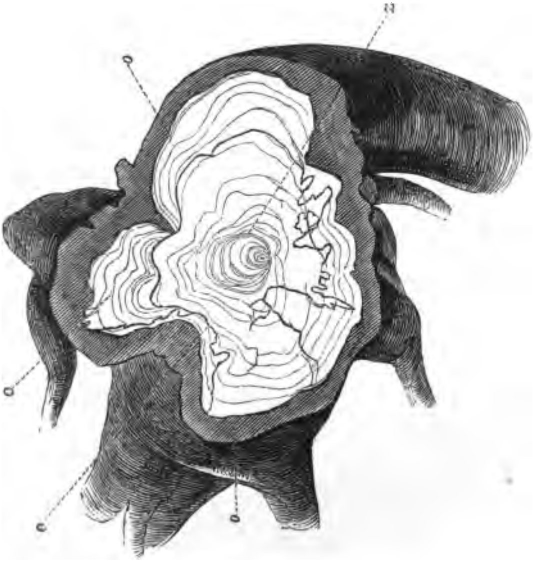

Fig. 14, A.

Fig. 15 A and B show both surfaces of the same piece, being the lower portion of the stem of a Pinus

Laricio; after growing to a considerable size, the diameter from *d* to *d* being 13½ inches, it was blown down; at *z* is shown within the dotted line the portion which was organised, as also small portions though much compressed at *o o*. Every other part being non-organised, and forming no connection with the root, it will be seen that to support itself against a high wind was impossible, without mechanical aid.

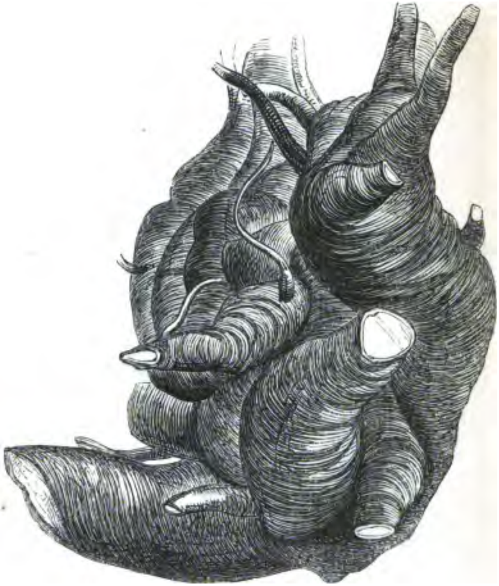

Fig. 14, B.

I have seen Cedars of Lebanon, after growing well for several years, become unhealthy, with portions of resin oozing out of the stem, caused by the compressed vessels of the roots being unable to pass it: in most

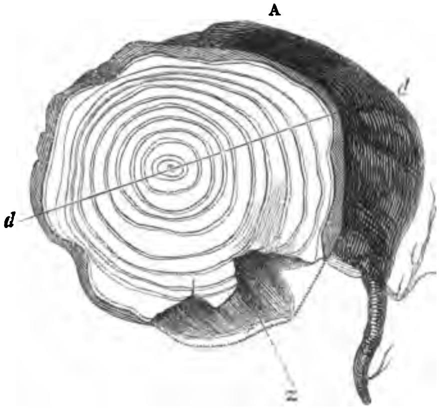

Fig. 15, A.

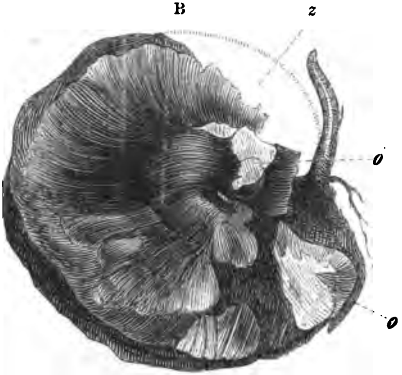

Fig. 15, B.

cases such plants became of a sickly yellow in their foliage, and frequently died. Thousands of such plants have been lost to the country from this cause alone. I can scarcely travel a few miles in any direction without seeing proofs of it in different stages. Some Cedars of Lebanon which I knew near Derby upwards of twenty years ago, are little larger than when I first knew them.

Having been the first in this country to graft the Cedrus Deodara on the Cedar of Lebanon, I was obliged to use such stocks of the Cedar of Lebanon as I could at that time procure from nurserymen, and the best which I could find were, and had been, in pots for years. Some of these are now what are here shown; several others I have now growing which show its ill effects, though ultimately they will become fine trees. For instance, it is a common practice to plunge trees in pots in the nursery-ground; by so doing small rootlets are induced to protrude from the stem above the mass of coiled roots; this having been the case with some of these Cedar stocks, these rootlets have established themselves, and have now become roots of sufficient magnitude to support the trees, and the ribs formed by such roots round the stems of some which are dead in the centre, are uniting and forming cylinders of living wood, and enveloping dead cores. Numerous other instances might be mentioned, showing different modifications of the same evil, but suffice it to say, that I have bad sufficient proof to convince me that scarcely a tree which has been grown in a pot in a young state, but has suffered more or less from it.

The nature and extent of the operations which have been carried on at Elvaston, have enabled me to make such observations, and have furnished me with incontrovertible proofs, such as fully justify what I have said or may say on the subject. The plan pursued at Elvaston, as far as practicable, has been to give immediate effect to the different parts of the grounds by thickly planting as we progressed, and when the plants became too thick or were required to complete other arrangements as our grounds were extended, we have been in the habit of moving them from time to time as circumstances required. Thus I have been able to examine on the most extensive scale the evils of pot-culture, for all plants which are expected to attain a considerable size. Fourteen or fifteen years ago, these mortifying lessons taught me to solve a problem which was given in that admirable treatise on evergreens, by the father of planters (the late Mr. M'Nab, of the Botanical Gardens, Edinburgh), and which had puzzled not only him, but all others who had considered it, up to that period; namely, some of the most magnificent specimens of Cape Heaths which horticulturists could then boast of, sinking from a state of health and vigour, whilst in rapid growth, to sickness and death in a few hours without any apparent cause. This was simply one modification of the evil which has been already noticed. The cause being this: during hot weather the sun acting powerfully upon an extended surface, the supply of sap required to pass through the compressed main roots strangling each other, was not equal to the demand made upon the foliage, and the heath, being a hard-wooded plant with small vessels, naturally soon became exhausted, beyond the possibility of renewing its energies. Ever since I have known this evil to exist, I have endeavoured to remedy it as far as practicable, by washing every particle of soil from all valuable plants which have come to me in pots, and untwisting the roots as far as possible, but in many instances have been mortified to find this beyond the reach of human skill; not only so, but I have been much annoyed at receiving many beautiful and apparently well-grown plants from considerable distances in large pots, involving considerable expense in carriage, and their first cost being considerably increased by the labour and pains bestowed upon them, having been potted and re-potted three or four times, and after shaking away all the soil belonging to the last shift, I have found it necessary to get rid of the third in like manner, and so on to the first, and have found in every instance the main roots twisted and interwoven in such a manner as to preclude the possibility of the plant succeeding ultimately as it would have done, had it been properly treated. I wish it to be understood here that nurserymen are not to bear the entire blame of this state of things, for in mentioning it to several, I have been met in this way: "we cannot sell our plants unless they are in pots." Now the reason of this is obvious, the ball of earth contained in the pot, ensures not only the safe transmission of the plant, but also its safety for a time, after being planted; this is all that can be said in favour of pot-culture. But the advantage can never make amends for the fearful disadvantages inseparably connected with the system. Agreeing then with the truism that "prevention is better than cure," and having as I trust succeeded in showing that such a system should be no longer continued, it now remains for me to show how a better state of things may be introduced, and the advantages arising therefrom. Let it then be ever kept in view by all who take an interest in planting, that the radical principle upon which not only the safe transmission of plants, but also their success after being planted, is a ball or mass of earth adhering to the roots, duly proportioned to the size of the plant. I would have planters, then, to *invert* their observations, and have *an eye to the roots,* rather than to the branches of the plants they purchase. Let *me* have a plant with a very moderate looking head, but with well established and healthy roots; and my neighbour a plant with a splendid head, but with its toes treated after the same fashion as a Chinese lady, and after a few years it will be no difficult matter to decide who has had the best bargain.

If purchasers will come to the determination to have *no* plants that have been a considerable *length of time* in pots, but such only as have well-established roots, with balls of earth of suitable size, and that they will not grudge the expense of carriage, I feel assured that nurserymen will soon furnish them with the description of plants required. As I have already observed, no plants which are expected to attain a great size should ever be grown in pots, but should be treated upon the same principle as our common forest trees, with this difference, that they never should be allowed to remain more than two years, and in some instances not so much, without being transplanted. By this means the main roots would radiate from the common centre in a natural manner, and the roots become sufficiently numerous to ensure a ball of earth to adhere to them. Plants would thus be furnished of a very superior quality, and at a much cheaper rate than those mutilated and expensive deformities nurtured in pots.

CHAPTER V.

PUBLIC PREJUDICES AGAINST PLANTS RAISED FROM CUTTINGS, GRAFTS, OR LAYERS, ATTEMPTED TO BE REMOVED—THE ADVANTAGES OF PROPAGATING VALUABLE SPECIMENS IN THIS MANNER, SHOWING THE NECESSITY OF SELECTING BEST VARIETIES.

THE existing prejudice which prevails to an almost universal extent in connexion with the propagation of plants, I am likewise anxious to remove, namely, the rejection of all plants amongst our rare Coniferæ that have not been raised from seed. This is based upon the erroneous supposition that plants raised from cuttings, grafts, or layers, will never make fine trees. Now I am aware that this supposition is perfectly correct where plants have not been properly treated; where they have been grafted on improper stocks, or where the stocks have been kept for a length of time in pots, and consequently subject to some of the evils named in the preceding chapter; but when the subject has been truly considered, and the plants, whether raised from cuttings, grafts, or layers, have been properly managed, as fine trees may be obtained, and with some sorts in a much shorter time, as from seed.

This subject, when clearly understood, must be of lasting importance to all admirers of fine trees, especially to such as long to see our country beautified and enriched, by a rapid and widely extended cultivation of some of the loveliest and most majestic objects with which the Divine Creator has adorned the vegetable kingdom. But whilst such a prejudice exists, comparatively few plants will be thus cultivated, and from the great difficulty, expense, and loss of time consequent upon obtaining these plants from seed, several kinds of the greatest interest must remain both scarce and expensive for some time to come. To those who have visited Elvaston Castle periodically, it is well known that the system here recommended has been acted upon, and that most successfully, establishing beyond all possibility of doubt, that as fine trees can be raised from cuttings, grafts, and layers, as any of the same kind raised from seed, and some of our best judges have acknowledged their incompetency to determine whether they were seedlings or not; and had not this plan been acted upon for many years past, some thousands of the most beautiful and valuable trees on this domain would not have existed at the present time.

For example, out of the immense number of large Cedrus Deodara, now at Elvaston, all have been propagated here, with the exception of about a dozen; and not more than half-a-dozen of the large ones are growing on their own roots, but grafted on the cedar of Lebanon.

Again, of the many large and beautiful Douglas firs, all except about two dozen have been raised here; and not more than two of the large ones are seedlings.

So great are the resources placed within our reach by a kind Providence, for increasing our comforts, that His laws, whether moral or physical, if thoroughly understood and strictly adhered to, will ensure success, in exact proportion to our activity and diligence. Wherever a perfect bud is found in a tree, that bud contains in itself a perfect tree in embryo, and the successful development of that bud to answer this end, depends much on the skill of the cultivator.

Again, many plants possess dormant buds, which cannot be seen under ordinary circumstances and observation, but which are capable of being excited so as to produce shoots, and ultimately perfect trees almost to infinity. For example, all the pine tribe, strictly speaking, of which the Pinus sylvestris or Scotch fir is the type, contain a perfect bud in the centre of every set of leaves, enclosed in a common sheath, capable of being excited at pleasure by stopping the shoot, immediately beyond the bud about to be called into action. It must, nevertheless, be borne in mind, that these buds do not continue to retain their vital energies, when in a dormant state, beyond one or two years, and consequently cannot be depended upon in shoots beyond that age. To such as are willing to profit by these hints, or even to parties raising plants from seed, too much importance cannot be attached to the selection of the best varieties to propagate; until lately, so little regard has been paid to this, in the raising of common forest trees, that British plantations generally are inundated by worthless varieties; seeds having been generally gathered from trees of the easiest access, and more regard paid to quantity than quality.

Now to all conversant with the raising of plants from seeds, it is known, that in a batch of young forest trees the variety is almost endless, and in the vegetable, as in the animal kingdom, the progeny of the same parents are found individually to possess great variety of constitution and structural development; by due attention to which, we are solely indebted for improved varieties of animals, fruits and flowers: but this is still a desideratum in our forest tree department.

Nevertheless, I would not overlook the praiseworthy exertions of certain individuals who have already in part drawn public attention to the subject, and have succeeded in introducing a much improved breed of young trees from the most splendid specimens of Scotch firs in the Braemar and other forests, to supplant the pigmy and worthless varieties of the same tree with which the country abounds.

As in the selection of the best varieties from which to gather seed, whether their merits consist in a robust and vigorous habit, or a graceful form and fine foliage, so the same attention ought to be paid in selecting plants from which to take cuttings or grafts. The same remark will apply to plants which are to be layered. No plant ought to be chosen for propagation, unless it has some particular merit to recommend it, and the variety of every species of tree with which I am acquainted, is almost as great as the number of individuals belonging to each family.

Again, in selecting stocks to graft upon, due regard should be paid to the existence of a natural affinity between the stock and scion, that is, a retentive scion should not be put on a free-growing stock, nor *vice versâ*, a free-growing scion on a retentive stock; but such kinds only should be brought together as are naturally allied, and would approximate to the same size, in a given space of time, if allowed to grow on their own roots.

Some kinds of the pine tribe possessing great merit, both for their beauty and size, are still scarce in our collections, and consequently expensive; such as Pinus ponderosa, macrocarpa and Sabiniana; seeds of these kinds being difficult to obtain, and from the gigantic size of their shoots, suitable stocks cannot be found upon which to work them. The only plan with them, is to propagate by layers, and for the encouragement of those who have hitherto been deterred from propagating in this manner, from the existing prejudice against plants thus propagated, I may state that in less than five years from the time the shoots were layered, I have succeeded in obtaining plants with fine seedling habits, both from Pinus macrocarpa and Sabiniana, eight and nine feet high.

CHAPTER VI.

ON THE FORMATION OF ROCKS AND WATER AT ELVASTON CASTLE.

THE formation of the lake at Elvaston Castle, and the rocks on the islands and surrounding banks have been entirely a work of art: the lake, islands, undulating embankments, and mound on the north side, have been cut out from a flat meadow, possessing no natural advantages. In forming the lake, at first we intended to give it somewhat the appearance of a serpentine river; but not having any definite plan, we commenced by levelling the uneven ground on the side and reducing it to a grass slope, running with a feather-edge to the water, and an agreeable effect being produced, we were encouraged to proceed, and to increase piece-meal the size of the water; which, at that time, was most desirable. The soil from the excavations was taken advantage of to form terraces in the gardens, and slopes on the sides of the lake.

As our work increased in interest and beauty, my noble employer's ideas of extent increased with it, and I at length obtained permission nearly to double its size, by taking in some acres from the paddock on the north side. For a short time, I was puzzled as to the disposal of the soil; but having hit upon the expedient of depositing it in the shape of a circular mound, near the middle of the north bank of the lake, keeping all the sub-soil in the centre, and the good or top-soil on the outside, forming at the same time a spiral walk to the top, which was kept flat, and planting it all round with laurels and such trees as we then possessed, it became an object of considerable interest to us at that time.

A grass terrace, with a sloping feather-edge, was formed on both sides of the mound, forming the northern boundary to the lake, the back of which was planted with trees.

The lake as already described, with its surrounding green carpet, was allowed to continue until 1838, no attempt at the formation of rock-work having been up to this time either attempted or contemplated, with the exception of a small fountain and grotto, with some rock to unite the two, which were formed in 1837. This fountain and grotto were placed on the south side of the lake near to the Castle; and I endeavoured at that time as much as possible to conceal them, by planting on both sides: this appeared to me the more necessary, as nothing would seem to justify an attempt at rock-work, from the total absence of everything like natural association in the surrounding scenery. On this point, my noble employer and I could not agree for a time, he being very much taken up with this my first attempt at rock-work, and from his strong predilection for uniformity, he was very anxious to have something of the kind on the opposite side of the lake to balance it. This idea I strenuously opposed for a time, as neither he nor I then contemplated the formation of a rockery of magnitude; and I could easily perceive, that if once we projected a piece of rock-work in the centre of a meadow, we should have our work before us for years to come. However, his lordship's indomitable perseverance, somewhat prompted by what he considered a successful attempt in what had been done, induced me to make a second effort to meet his wishes, and upon having a grant for a considerable portion of tufa (the local term for the petrified limestone-formation, common about Matlock, Allport, Lath-kiln-dale, and other parts of Derbyshire), I took advantage of the mound already named, and commenced operations on the opposite side of the lake, by cutting away all the laurels in the front, and attempted somewhat to imitate a ruin, as the best balance I could think of for the fountain and grotto nearly opposite.

When this was about half-finished, and I had worked up all my materials, his lordship arrived from London, and expressed, in very glowing terms, his admiration and entire approbation of what had been done; and I now obtained a *carte-blanche* to finish the ruins of my old castle.

Having proceeded so far with our work, I drew the attention of my liberal-minded master to the necessity of fortifying our castle against the attacks of future critics, by extending the ramparts to a considerable distance on both sides. This being accomplished, it was now very obvious that we had proceeded so far, that to stop short of giving the whole the character of a rocky scene, would be to lay ourselves open to severe censure: of this, we had but one opinion. And now a determination was formed to carry the thing out, which involved considerable ground-work operations, and in order to gain soil for embankments (which are indispensable where anything like rock-work is attempted), we took advantage of sinking the paths where the ground would admit of it, forming the slopes with broken undulations as much as possible to resemble the natural play of the ground in rocky scenes; and on the margin of the lake, at intervals, all round, little bays, promontories, and creeks were formed. The soil taken from these excavations, enabled us to raise the islands, and so to form the surrounding embankments, that with after-planting we were enabled to conceal every portion the least desirable to be looked upon, and only to bring into play the water and rock from the best points of sight. By this diversion, it will be found by those who visit Elvaston Castle that in walking round the lake, the various pictures which present themselves are very dissimilar to each other, and the interest of the visitor is continually kept up.

Here the great advantage of moving large trees is manifested: no plant can be named equal to an old yew-tree for giving depth and effect to a rocky scene; and by transplanting, from considerable distances, a goodly number of these old trees, some of which have weathered the breeze for centuries, we have given an air of antiquity to Elvaston which nothing could have accomplished but the lapse of as many years, had young trees only been planted. Trees of considerable size, likewise, of Pinus Cembra, have been removed from other parts of the grounds; and this noble tree, which gives a peculiar charm to such scenes, has advanced us in point of time several years.

As a back-ground to the whole, a plantation has been formed, extending all along the north side of the lake, composed of Deodar Cedars, Lambert and the great Hooked-cone pines, Douglas fir, &c., which, when they reach 60 or 80 feet in height, will produce an effect not easily at present to be understood.

The Hemlock Spruce, with its flowing, graceful habit, admirably suited to rock and water, has been planted on some of the islands, forming a bay surrounding the upper end of the lake. Junipers and Cypresses, with their distinctive shades; Irish junipers, with their cold grey tone (charming plants for highly decorating rockeries), are worked up with Lavender-cotton, Sea Rag-wort, Common Savin, Tamarisk-leaved Juniper, producing a very rich effect when seen with a favourable light.

All variegations are highly propitious for blending with rock-work, particularly when set off to advantage with the deep black tone of the Irish yew.

The gold and silver variegations of Ivy are well suited to cover any defective portions of the rock, or to give effect where such tints are wanted.

One of our richest pictures in point of colour is composed of some fine specimens of the richest variety of Gold-edged holly, on a grass slope; these hollies being supported a little further back with Pinus Cembra, forming the strongest possible contrast; a few plants being introduced of the warm green of the Chinese Arbor-Vitæ, the rocks broken with Silver ivy, lavender-cotton, Juniperus tamariscifolia, the back-ground being composed of the common yew and Cedar of Lebanon; this, when viewed as a whole across the lake with a good light, is a gem.

In forming rock with tufa, advantage should be taken where it can be obtained (as has been the case at Elvaston), of large blocks of common sand or grit-stone, to form foundations for masses of rock; and likewise long pieces should be raised and projected in oblique directions, and cased over with good specimens of tufa, the whole united by breaking all the joints with Roman cement, mixed with a large portion of sand, dashed on as roughly as possible, in imitation of the rock. Several pieces thus united, when well managed, and the whole afterwards coloured, become in effect a solid mass of rock.

As a matter of course, such ferns and other rock-plants as grow naturally on the kind of rock used, should at all times be taken advantage of, and, the more easily to accomplish this, pockets should be occasionally formed in the rock when building, in order to receive a portion of soil, for the after-growth and better development of such plants.

Those who have viewed rocky scenes with an artistic eye, must have observed the great richness and effect given to them in nature by the verdant carpet spread by the Great Author of all that is beautiful, in front of the rocky mass, and again as a coverlet on its summit: these soft velvet touches (when well imitated), with a pleasing undulation, give a charm and relief to rock, for which nothing else can compensate.

Rock and water when worked well up together, the boundary of the water concealed, a natural boldness given to the rock, with deep shades, a soft carpet spread for the eye to repose upon, and the whole made to stand out in proper relief, the back-ground worked up by rich and suitable evergreens, the fore-ground and middle distances furnished with objects of sufficient interest,—I say that a picture of this kind affords to all who have an organisation for the beautiful, a pleasure which cannot be felt by the most masterly representation of the same thing on canvas.

CHAPTER VII.

THE GENERAL ADOPTION OF EVERGREEN HEDGES THROUGHOUT THE COUNTRY STRONGLY RECOMMENDED; THE ADVANTAGES ARISING THEREFROM POINTED OUT; AS ALSO THE EASIEST MODE OF ACCOMPLISHING THE SAME: LIKEWISE THE GENERAL SUBSTITUTION, IN GRAZING AND PASTURE LANDS, OF CLUMPS OF EVERGREEN TREES; ANSWERING THE TWOFOLD PURPOSE OF DECORATING IN THE HIGHEST DEGREE OUR LANDSCAPE SCENERY, AND AFFORDING SHELTER TO OUR CATTLE; AND THE EVILS OF OUR PRESENT SYSTEM OF GROWING HEDGE-ROW TIMBER POINTED OUT.

To the subject of evergreen hedges, I have for many years anxiously wished to draw the attention of the public. Ever since the thought suggested itself to me, I have regarded it with deep interest, and it would afford me a pleasure more easily felt than described, if I could succeed in persuading the proprietors of land and agriculturists generally, to give due consideration to the subject: that once done, I am sure it would be taken up with spirit, and the whole appearance of the country changed in a few years. Nothing has so great a tendency to give an air of refined civilisation to a country generally, and to bespeak at once the progress of agriculture, as well-managed hedges; but unfortunately in this country what one would wish to see, forms the exception and not the general rule. I have no hesitation in saying that our progression in this respect (as a nation) has not kept pace with other things. A glance at the subject to a reflective mind, will be sufficient to convince all who are anxious for improvement, that the waste of land by hedge-row timber of a very inferior description, and also the overgrown hedges composed, in too many instances, of such rubbish as should never be allowed to form a hedge,—such as brambles, briers, blackthorns, elder and hazel-bushes, with suckers arising from the roots of trees that may have been felled,—and where these do not happen to be sufficiently near, the gaps filled up either by dead thorns, hedge-stakes, or wood-fencing, —involve an annual expense, which is very considerable, and at all times very unsatisfactory. This may seem a strongly drawn picture, but it does not exceed the reality in many places with which I am acquainted. My chief object in this chapter is not to dwell upon ill-managed fences, but to substitute hedges of the common holly for our common quick hedges (however well they may be managed) throughout the country. This may seem a startling proposition at first, and will no doubt be regarded by many rather as an emanation of a speculative and enthusiastic brain, than of a calculating and mature judgment. Whichever view may be taken, my duty is now to lay before the public what appears to me the comparative merits of the two plants already named—namely, common holly, and the common white-thorn, or quick, to form the hedges of this country.

Little need be said of the common quick hedge, as its beauties during the summer and early autumn months are familiar to every one. Where the thorn is allowed to give a profusion of blossom, it has then a charm both for the poet and painter; but this is only the case when the hedge is allowed to run wild, and overreach the bounds of an ordinary fence. During that period of the year when it is in a leafless state, it has no claim as regards beauty, and comparatively little for shelter; and it must be admitted that, during the winter and spring months, shelter is of the greatest importance in all hedges surrounding grazing and pasture land.

On the other hand, were our hedges entirely composed of the common holly, our country would be so completely changed as to present to the eye the appearance of a winter garden; besides affording shelter for our cattle during that period of the year when it is most wanted. Before I make any further remarks on these two characteristics,—namely, beauty and shelter,—I would here anticipate and meet the objections which are generally raised against the holly —namely, its slowness of growth and original expense. As to the former objection, so far from its being founded on truth, I am fully convinced that a fence against cattle can be sooner raised from holly than from quick. As soon as a holly-hedge is fence high, it is fence strong; not so with a quick, which requires several years after it has reached the height required for a fence, before it can be said to be a sufficient protection against cattle. I admit that the holly, as sometimes treated, is slow of growth, but not so when properly managed, as will be hereafter explained.

The latter objection, namely, expense of a holly hedge, simply arises from hollies not having been generally used for such purposes.

If the demand for small hollies were as great as for thorns for fencing, nurserymen would soon supply them in as great abundance, and quite as cheap.

But to come to the point: I recommend all proprietors of land who are sufficiently alive to the importance of this subject, to stipulate with their tenantry to have a small portion of suitable land, proportioned to the size of each farm, to be appropriated to the growth of plants, whether holly or quick, for fencing purposes. These plants I would have purchased from nurserymen in a young state; and when planted in the farm nursery, the greatest care should be bestowed upon them, so as to ensure a rapid growth; and more especially to have well prepared roots, so as with certainty to calculate on every plant growing when finally planted out as a fence.

The plants, when in this nursery plot, should be kept perfectly free from weeds; the ground should be frequently stirred and kept open during the growing season, taking care not to interfere with the roots;

the whole well watered, and occasionally during the period of growth with *liquid manure.* Whenever the growth is completed for the season, the plants should be *annually* transplanted. By this means, by the time they are ready for forming fences, each plant will lift with a well prepared mass of roots, and a sufficient portion of soil adhering, so as to command success, which will fully compensate for all previous labour and expense. These plants, whether for new fences or repairing old ones, should never be finally turned out, until they are three or *four* feet high, when they can take care of themselves; and subsequent weeding and wood fencing as a protection will not be required; except in some instances, a single rail, as a guard against cattle.

Had the farm nursery plot been brought into play and carried out as here recommended, a very great saving, both in money and labour, would have been effected amongst our agriculturists; and fences of a very different description would have been formed throughout the country, from what we now see, even with the common hawthorn.

I trust, in this age of improvement, so soon as it is shown what may be accomplished, a better system will be adopted; and I have no doubt, in due time, generally carried out.

The decided advantage or capability which the common holly possesses for pictorial effect, when compared with the common quick, is very great.

Having already noticed the increased beauty which would be given to the appearance of our country, were holly hedges substituted for those of the common quick, I may add, that where pictorial effect is desired, that may be obtained very easily, and at comparatively little expense, to an unlimited extent, agreeably to the taste and skill of the operator.

At given distances, single shoots may be selected and allowed to remain when the hedge is topped, and, at the proper season, these shoots may be grafted or budded with the more rare and beautiful varieties with which our principal nurseries now abound; varying in form from the fastigiate and minaret-like appearance of the Ilex recurva, with its small, narrow leaves, to its opposite, the common weeping holly, with its beautiful pendant branches, as decidedly pendulous as the weeping ash or willow.

Again, the variety of form and size of leaf which this interesting family affords, is very great, from the broad laurel-like leaf of the Latifolia, to the tortuous and fanciful forms of the Hedgehog, Broad-spined, Saw, Myrtle, Smooth-leaved, and other varieties.

And, lastly, from the numerous gradations of tint, in burnished and opaque greens, striking contrasts may be effected, with the gold, silver, and milk-maid varieties; the red-berried varieties contrast beautifully with those of the yellow-berried, which latter variety bears fruit in such profusion as to give its branches a golden hue throughout the winter, its own deep green foliage setting off the clusters of yellow berries to great advantage.

When all the properties of the holly are taken into consideration, a reflective mind cannot but be struck with the wisdom and goodness of the Great Creator in thus furnishing us with a genus of plants so admirably adapted to meet our wants during that period of the year when beauty and protection are most required, and cannot be found in any other family of plants suitable for fences. The holly being indigenous to our island, most of the species and varieties are constitutionally adapted to the vicissitudes of our climate.

The holly may with propriety be called a winter plant, as throughout that season it possesses its greatest beauty of colour, and density of foliage.

As field-shelter for our flocks, by means of planting evergreens, has hitherto been over-looked, I am anxious that something should be done, and in such a way as not only to answer that end, but also to add much to the beauty of our landscapes.

At present, the eye is delighted whilst gazing on many sweet spots in our highly-favoured Isle, when viewing from an eminence a richly wooded locality, at the time when the trees have on their summer mantles; but that delight is much alloyed with the opposite reflection, that however pleasing as a whole the scene may be, it will not bear analytical investigation, without the following unpleasant fact staring us in the face: namely, that the whole is composed of parts which call into question, not only our taste as landscape artists, but our judgment as political economists.

If we trace one hedge-row after another, we may wander a whole day and perhaps not find a single tree worthy either the pen of the poet or the brush of the painter to describe or portray. On the other hand, in these days of agricultural distress, the political economist would be horrified were his eyes sufficiently opened to discern the amount of evil arising from the waste of land caused from wide banks and hedge-row timber of an inferior description; which in many instances have occasioned failure in crops more than ten times the value of such timber.

Most kinds of trees now in our hedge-rows are very injurious to the agriculturist, but more especially the ash and elm, particularly the broad-leaved variety of the latter, which should never be planted, or even allowed to remain, in hedge-rows; and the stunted and deformed growth of many trees found in hedge-rows, with short stems and wide-spreading tops, render them comparatively of little value when brought into the timber market.

Again, the fences under and adjoining such trees are seldom what they ought to be; and when the trees are felled, unless extraordinary pains be taken in grubbing them, and subsequent attention be paid to the quicks planted in the gaps, we generally find such fences out of condition for years after. With the exception, then, of the different varieties of holly being worked on the common holly in hedge-rows, as before recommended, and that only in certain instances, I here *denounce in toto* the system of hedge-row timber; and I feel assured that the time is not far distant when the progress of science will stamp it (where it is allowed to remain) as only a relic of the mismanagement of those who have gone before us.

To such, then, as enter into this view of the subject, I would recommend the planting only of such trees as will answer the two-fold purpose of adding beauty to the landscape and affording shelter to our flocks. The combination of this two-fold object will at once show the necessity of a different arrangement; and, instead of the landscape being all dotted over with single trees in rows, I would plant them in groups generally at the junction of three or four fields, as shown in the accompanying diagrams.

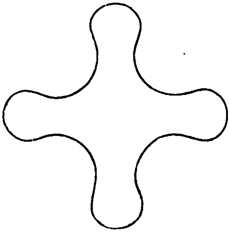

Fig. A.

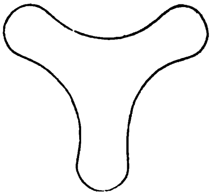

Fig. B.

Fig. A is adapted to the junction of four fields where the fences meet at right angles; Fig. B where three meet; and either figure can be modified by enlarging or diminishing any of the concave sections, where the fences do not join at right angles, where four meet, or at an equilateral triangle in the case of three. But whatever may be the modification of the figures, to suit contingent circumstances, I give them in their perfect form, as the basis of a system combining the greatest economy of land, and affording to every field where the system is adopted a concave section for shelter, let the wind blow from whatever quarter it may. Where the enclosures or fields are very small, these clumps, as a matter of course, should be confined to the corners of such fields; but where the enclosures are large, they may be placed with great propriety in the fields themselves.

Whether one clump or more be planted in a field, the most favourable sites of course will be selected, to give effect to the landscape. Where a clump or clumps are planted in the middle of a field, Fig. B will be the most suitable.

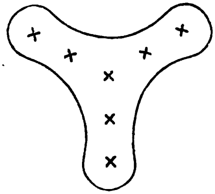

Fig. C.

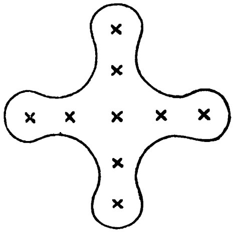

Fig. D.

In very small clumps, seven trees will be sufficient, as shown in Fig. C, and of nine as shown in D.

In such cases, trees of a dense habit should be selected, as Pinus Austriaca, Pinus Pyrenaica, and Pinus Taurica.

Where very small clumps only are planted, the black spruce or Cembran Pine may be introduced as occupying little space horizontally. Where more space can be allowed, so as to admit of larger growing trees, such as Deodar Cedar and Douglas Fir, Hemlock Spruce, and Pinus insignis may be introduced, as objects of the greatest beauty; and, at the same time, affording excellent shelter.

In such localities as are not favourable for the Hemlock Spruce and Pinus insignis, the Cedrus Deodar and Abies Douglasi will be found to grow freely. Where shelter is the primary object, the most judicious selection can be made from the following trees, some of which are very rapid growers, and attain to a great size, namely:

Cedrus Deodara,
Abies Douglasi,
Abies excelsa, or Common Spruce,
Pinus Austriaca,
Pinus Laricio,
These three can be had now from nurserymen at a cheap rate.
Pinus Pyrenaica,
Pinus insignis,
Lambertiana,
Monticola,
Ponderosa,
Taurica.

Wherever such clumps are introduced, I take it for granted that a holly hedge will be planted on the outline of each diagram, unless it be such groups as are placed in the middle of fields, when invisible iron or sunk fences are adopted; then, of course, the trees will be seen to greater advantage; and such groups will be more artistic in appearance than when surrounded by holly hedges, though less effective in point of shelter.

Where the ha-ha or sunk fence is used, the soil excavated may be all thrown into the inside of the clump, and a decided advantage will be thus gained both for the growth of the trees and appearance of the groups, particularly on flat surfaces. Where the space will only admit of a single tree, as at the junction of small enclosures, then Diagram E may be adopted as a suitable form.

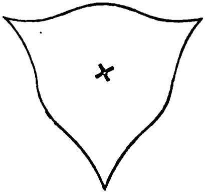

Fig. E.

CHAPTER VIII.

A SELECTION OF THE MOST VALUABLE EVERGREEN TREES AND SHRUBS WHICH ARE NOW AVAILABLE FOR ORNAMENTAL AND USEFUL PLANTING, WITH CONCISE POPULAR DESCRIPTIONS.

Botanists classify the plants noticed in this chapter into three natural orders; these, again, are subdivided as shown by the following synoptical table:

Orders.	Sub-orders.	Genera.
1. Cupressinæ.	Juniperineæ	Juniperus.
	Thujopsideæ	Biota. Thuja.
	Cupressineæ veræ	Cupressus.
	Taxodineæ	Cryptomeria.
2. Abietineæ.	Abietineæ veræ	Pinus. Abies. Picea. Cedrus.
	Araucariæ	Araucaria.
	Cunninghamiæ	Sequoia.
3. Taxineæ.		Cephalotaxus. Taxus.

Amongst the different genera of plants belonging to the foregoing orders, several species deserve particular attention, being those best adapted for ornamental or useful purposes, and of which sufficient is known to warrant the recommendation given to each. As all these plants have been arranged and described in scientific and botanical works now before the public, it would be superfluous in me to re-write what has been already written, seeing that it is not my intention to swell out this volume beyond a popular size, but to make it a book for general use. I shall therefore confine my remarks to such as have the greatest claim to public attention, and give such brief descriptions as will convey enough to arouse inquiry which may, and I trust will, give rise to great improvement in the style of British planting; and draw attention to the more rare and valuable evergreen trees and shrubs, with a view to their extensive cultivation. Most of these plants are, and I trust ere long all will be, within the reach of every one possessed of the means and taste to improve our landscape gardening.

As botanical arrangement has little connexion with the general disposition of trees, either in the forest or landscape, whether they be planted with a view to profit or effect, I apprehend it will accord more with the spirit of this work, if, in drawing attention to the most conspicuous, I take certain trees with which my readers may be considered to be best acquainted, and which will convey a better idea of new ones, when it is understood that a resemblance or affinity exists among the number of each section, as—

The Cedar.
The Fir.
The Pine.
The Araucaria.
The Cryptomeria.

The Yew.
The Cypress.
The Arbor-vitæ.
The Juniper.

The Cedar (*Cedrus Libani*) of Lebanon, needs only to be mentioned as having been hitherto the greatest ornament in British gardens or parks, and the associations connected with its history to the biblical student stamp it as a sacred tree. It is but fair to say that I have had ample means of proving that its wood, in this country, is of little value, being coarse and brittle in texture.

Not so with the Deodar Cedar (*Cedrus Deodara*), of the Himalayas. This eastern emperor, as it may justly be termed, as described in Loudon's "Arboretum Britannicum," and in works which he quotes, is not only a tree of surpassing beauty, but the excellence and durability of its timber render it extremely valuable. Mr. Loudon says (p. 2431, Arb. Brit.), "The wood of the Cedrus Deodara is very compact and resinous, and has a fine, fragrant, refreshing smell, like that felt when walking in pine groves towards evening or in moist weather: and very different from that of the Cedar of Lebanon. Its wood has a remarkably fine, close grain, capable of receiving a very high polish: so much so, indeed, that a table formed of the section of a trunk nearly 4 feet in diameter, sent by Dr. Wallich to Mr. Lambert, has been compared to a slab of brown agate. Dr. Royle informs us that the wood is particularly valuable for its durability, and is much used in the construction of Himalayan houses. In Cashmere, according to Mr. Moorcroft, it is used for buildings, both public and private, and for bridges and boats. Strips of it are also employed for candles." Dr. Lindley states that "Mr. Moorcroft procured specimens from the starlings of the Zein ool Kuddul bridge, in Ladakh, where it had been exposed to the water for nearly four hundred years." The following extract is from a letter from the Honourable W. Leslie Melville to the Secretary of the Highland Society of Scotland, dated Calcutta, January, 1836, and printed in Lawson's Manual:—"The timber is employed for roofing and other purposes, and, if sheltered from the weather, is very durable. It is found perfectly sound in the roofs of temples which cannot have stood less than two hundred years. For out of doors purposes I understand it requires paint, which, however, perfectly preserves it."

The MOUNT ATLAS OR AFRICAN CEDAR (*Cedrus Atlantica*). This tree is of recent introduction, and appears only to be a glaucous or silvery variety of the Cedar of Lebanon; it is said, however, that the wood is very valuable. At all events a silvery variety of cedar, for pictorial effect, is a great acquisition.

The SPRUCE FIR (*Abies excelsa*) is a noble tree in certain *varieties*, and in some favourable localities, where it branches to the ground, and rises above one hundred feet with a dense, healthy foliage; the wood, however, is inferior to other species. It forms the type of the Spruces, and is only noticed as such.

The BLACK SPRUCE (*Abies nigra*), named from the deep colour of its small cones, is a beautiful tree; in many varieties the tone of colour is light and silvery, its height sixty or seventy feet; the wood valuable.

Menzies Spruce Fir (*Abies Menziesi*). Of this there are two varieties, very distinct in habit, the one close and compact, the other open and spreading; both, from the leaves being silvery underneath, have a whitish appearance, and are effective in colour: they partake of the habit of the spruce; this species luxuriates on the Moors of Scotland.

The Himalayan Spruce (*Abies Khutrow*) is a highly ornamental tree, with long, needle-like leaves of a light colour, and pendant branchlets; the outline of the tree being pyramidal, it may be called a pyramidal weeper: in a young state, in light soil, unless near the sea, it suffers from spring frosts. It is unquestionably a valuable addition as an ornamental tree. The following firs are flat-leaved, and very different in appearance from the common spruce.

The Douglas Fir (*Abies Douglasi*) of which there are several varieties, is a tree of gigantic dimensions, towering up to the height of two hundred feet and upwards, with a trunk from ten to fifteen feet diameter; the timber is heavy and firm, with few knots, in colour like the yew, and not liable to warp; it grows rapidly in this country; the leaves possess an agreeable odour, and in some kinds partake of the rich, deep tone of the common yew on the upper surface, with a silvery hue underneath, giving as a whole a fulness of colour which is *very beautiful* and striking to most observers.

Another variety of the same tree, with red cones in a young state (the other varieties being green in the same stage of growth), forms a striking contrast to the first-named sort, which is of a cold, retiring green, whilst the latter is warm and advancing in colour.

Mr. Loudon does not seem to have had favourable opportunities of judging of the rapidity of the growth of this magnificent tree, as he has much underrated it; he gives eighteen inches as the average growth in height for a year; now this may be fairly doubled, and three feet given as the average advance in height, at least for several years, where the ground has been well trenched and is otherwise favourable. At Elvaston young trees raised from cuttings or layers have shot up as much as five feet in one year; in two extraordinary instances, five feet seven inches and five feet nine inches.

The HEMLOCK or CANADIAN SPRUCE (*Abies Canadensis*), is a tree not new to this country, as in several places large specimens exist; neither is the wood valuable, yet the bark by the tanners of North America is considered invaluable, and as a decorative tree, it has few equals: its graceful flowing branches form themselves into heavy masses, which afford to the landscape painter a contrast of light and shade of the highest order; seventy feet may be given as the height of this tree. The colour rather a neutral tint.

The Silver Fir (*Picea pectinata*), like the common spruce, need not be described, but conveys an ideal resemblance to the following species, which are comparatively little known, though all superior to it.

The Great Californian Fir (*Picea grandis*), a rapid growing and noble tree, likewise attaining a great height, from one hundred and fifty to two hundred feet, and may truly be said to rival Abies Douglasi in appearance. It seems to form a connecting link between the Silver and Douglas Firs; it is still scarce, the two largest plants in Britain are at Elvaston, upwards of fourteen and fifteen feet high, and in 1837 both were raised from cuttings of about two inches in length. Every year these fine trees become more beautiful. It is stated that the wood is soft and white, and of little value compared with some others, but from its great size, as growing two hundred feet in the low moist valleys of Northern California, and its dense full habit, with an even middle tone of green, it will prove an invaluable acquisition in some of our finest landscapes.

The Noble, or Long-bracted Silver Fir (*Picea ncbilis*), perhaps the most beautiful of any of the firs. Its tortuous silvery leaves, remarkable cones, with long brownish-yellow bracts, thickly set, and its majestic habit as a tree, excited the admiration of the celebrated and lamented Mr. Douglas, who introduced it into this country in 1831. He says in his Journal, "I spent three weeks in a forest composed of this tree, and, day by day, could not cease to admire it." Of all the firs it was the greatest favourite with the late Earl of Harrington, and next to it the Abies Douglasi. This, being the case, neither pains nor money was spared to increase the number at Elvaston, and although not one seedling plant is to be found growing here, yet a similar collection cannot be found (out of California), although a solitary plant can here and there be found larger than any here, seeing that all have been raised from cuttings or grafts. The wood of this tree is excellent, and for ornamental planters few can equal it.

WEBB'S LARGE PURPLE-CONED SILVER FIR (*Picea Webbiana*), named after its discoverer, Captain W. S. Webb (see Loudon's Arb. Brit. p. 2344), who thus describes it: "This purple-coned pine attains a height of eighty or ninety feet, with a diameter of stem near the ground from three to four feet; the cone is produced on the extremity of the shoots. The leaves are about one inch long (sometimes two in England) of a beautiful light green, having a white stripe in the centre. The wood even equals in the texture of its grain and in odour the Bermudas Cedar. The fruit is said to yield at full growth a purple pigment, by expression of the juice. The silvery hue of the bark, the beautiful contrast of the leaves, with the rich purple of the cone, glittering with globules of transparent resin, produce, in combination, one of the most striking objects which can well be imagined, and entitle the tree to precedence for ornamental purposes." Although this splendid tree was raised in this country in 1822, I am not aware that any very fine specimens exist north from London, and the prevailing opinion is that it will not endure our climate. Notwithstanding I am fully convinced that it will succeed when its proper treatment is better understood. When the wood is well ripened it will stand our winters with impunity, unless it be under unfavourable local circumstances. The way in which this tree usually suffers is by having its buds killed by frost, sometimes in autumn, if not ripe, and by late spring frosts, after they have begun to grow. Even the common Silver and Balm of Gilead Firs are subject to the same thing in this country. I find that the Silver Fir section do much better when grown in strong marly loam, even partaking of clay, than in light siliceous soil, but I shall advert to this again in the concluding chapter.

PICEA PINSAPO, a species from Spain, which grows from sixty to seventy feet high, is also a lovely object. As a single tree on a lawn, few can surpass it; every leaf and branchlet seems perfect and in its place, and coming out late in spring, it is rarely if ever surprised by frosts. From its perfect symmetrical habit and refined appearance when once known, it will become an inhabitant of many a favoured spot.

NORDMANN'S SILVER FIR (*Picea Nordmanniana*), from Northern Asia. Though this tree is of more recent introduction than most others, and still but small, yet from its having been at Elvaston Castle nearly two years before it was introduced elsewhere in this country, I have been enabled to form such an estimate as with confidence to recommend it as a tree of great attraction. It is said to reach the height of ninety feet; and coming out later in spring than any other, frosts will never affect it. The bark on the young shoots being of a brownish green, and the colour of the leaves also of a warm tint, it contrasts well with trees of a colder hue.

THE PINES.—The Pines such as have two leaves in a sheath, of which the SCOTCH PINE (*Pinus sylvestris*) is the type. Some may be mentioned of great beauty and value as timber trees.

The CORSICAN PINE (*Pinus Laricio*) is an erect, *fast-growing* tree; with long leaves of a deep or blackish green; it grows from one hundred to one hundred and forty feet high, and the timber is as valuable as the red deal of commerce. A lengthened description of this valuable timber tree is given in Loudon's Arb. Brit., where he describes it as being now extensively cultivated in France. It has been used as masts for the French navy for more than half a century, and in thirty or forty years when favourably grown, is available for such purposes.

AUSTRIAN OR BLACK PINE (*Pinus Austriaca*), of which the forests in that country are composed, is likewise valuable as a timber tree, and for shelter in bleak situations is perhaps unequalled. Its foliage is long, dense, and of a deep green. Lawson says, "This tree attains a height of upwards of one hundred and twenty feet; it has the desirable tendency to grow rapidly and robust in a variety of soils. In its natural habitats, it is found to delight, and to come to its greatest perfection in a deep, dry, sandy soil, on the chalk formation, but is also found luxuriant in moist soils, if not too wet. The wood, which is whitish yellow, but rusty yellow near the heart, is very resinous and much valued, and used for a variety of purposes, for it resists the effects of water, and alternate moisture and dryness. This tree, though planted considerably since its introduction by our firm into this country, in 1833, deserves, on account of its excellent qualities, much greater attention as to its general cultivation." It is possible that it will ultimately supersede the common Scots Fir.

Pyrenean Pine (*Pinus Pyrenaica*). This, and the two former are strictly allied, but for beauty of foliage and graceful habit none in the same section can equal it. The bark of the young shoots resembles the cane in colour, and from its combining picturesque beauty, excellent shelter, rapidity of growth, and value of timber, it should be extensively cultivated.

Pallas' Pine (*Pinus Pallasiana*). This tree, like the others, is very effective for shelter; but it does not grow so fast, being of a round, compact, dense habit—some varieties varying much; the outline, as a single tree, is stiff and robust, with deep, bluish green leaves, rendering it most desirable as a contrast to others. Pinus Taurica has been given as a synonyme of Pallasiana, but with me they are distinct; and I am inclined to doubt their identity, although the same habitat has been given.

Another variety of Laricio, distinct from most others, is *Caramanica*, or by some called *Romana*, a highly ornamental variety, of rapid growth, dense habit, and though sufficiently beautiful, like Pyrenaica, to occupy a prominent place in a fore or middle ground distance, yet for a full and rich background it is invaluable.

The THREE-LEAVED PINES form a most *interesting* section, the most striking of which are—

The **SABINE PINE OR GREAT PRICKLY-CONED PINE** (*Pinus Sabiniana*), will ever be a startling object in the landscape. Its very robust habit, rapid growth, attaining one hundred and twenty feet in height, its long leaves (ten to fourteen inches) of the most beautiful glaucous hue, with the young shoots of the same colour, all tend to make it an ornamental tree of the greatest value.

The **GREAT-HOOKED PINE** (*Pinus macrocarpa*) is, like it, an object of equal value. It differs from the former, in being more pyramidal in outline, and even more robust in growth and foliage, which is not so glaucous as in Pinus Sabiniana, and the young shoots are of a reddish purple colour. I have seen this tree make a leading shoot in one year nearly four feet long, and nearly two inches in diameter. Its height when full grown is above one hundred feet.

The HEAVY-WOODED PINE (*Pinus ponderosa*), like the two former, is very strong and robust, grows rapidly, and reaches one hundred feet in height; its leaves are long, and though not remarkable in colour, yet the tree, as a whole, from its gigantic, fine habit, is very striking amongst others, and highly ornamental. At Elvaston there are two very distinct varieties.

The REMARKABLE PINE (*Pinus insignis*) does more to enrich a winter scene than any other tree in point of colour, from its rich, warm Pomona green, which it retains during winter, when nearly all others throw off their warm summer dress: it grows rapidly, frequently making leading shoots from three to four feet long; is very thick and full in habit, affording likewise excellent shelter; it reaches one hundred feet in height, and the wood is said to be valuable.

Others of this section deserve particular attention, —as the BENTHAM PINE (*Pinus Benthamiana*), strong, robust, and deep green, and gaining sometimes the enormous height of two hundred feet, and upwards.

The RADIATED SCALED PINE (*Pinus radiata*), which grows one hundred feet high, thick and full in habit like Pinus insignis, but of a much deeper green: it affords valuable timber for boat-building and other purposes.

Amongst the FIVE-LEAVED PINES, several are remarkable; some exceedingly so from their great size, others from their long, thick, tufted foliage and effective colour. Several of great interest amongst the Mexican kinds have been found too tender for general planting; but such as I intend noticing have stood at Elvaston.

The APULCO PINE (*Pinus Apulcensis*) is a lovely tree; its long hairlike leaves hanging down from the branchlets, all relieved from each other, as if combed out, give it a graceful appearance. In colour it is of a light green; the whole tree has a light, airy look; it grows about sixty feet high in Mexico.

The LINDLEY PINE (*Pinus Lindleyana*) is likewise very beautiful; having very long and strong glaucous leaves, the young shoots partaking of the same colour. At a distance it is effective. It is not a tall tree, growing only about forty feet high.

The RUSSELL PINE (*Pinus Russelliana*) is a very remarkable tree, strong and robust in the shoots, which are of a dark mahogany colour, with very long, flowing, tufted leaves, of a lively warm green. This tree at once strikes a stranger as being more than common, and tells at a distance in the landscape.

AYACAHUITE or MEXICAN WEYMOUTH PINE (*Pinus Ayacahuite*), is a very fast growing, dense tree, of a warmer tint than the common Weymouth Pine. It grows to a hundred feet in height, and is very ornamental.

The LAMBERT PINE (*Pinus Lambertiana*), is the giant of this section, having been found by Mr. Douglas more than two hundred feet high, with cones upwards of eighteen inches long, and the timber of enormous size; the colour of the leaves is of a blackish green, admirably adapted for a background.

The MOUNTAIN WEYMOUTH PINE (*Pinus monticola*), is a valuable species in point of colour, the inner surface of the leaves being white, which, when opened or somewhat reflected give it a silvery hue, and render it excellent as a contrast to darker kinds.

The SNOWY PINE (*Pinus nivea*), is akin to this, if not a variety of the same species. This sort is very white and silvery in appearance, and very pleasing to look upon, whether near or at a distance. Both this and the Monticola grow fast, and are great acquisitions for producing effect.

The CEMBRAN PINE (*Pinus Cembra*). For working up a beautiful landscape, this tree seems indispensable from its hard, rigid, conical outline, and severity of colour, affording the deepest shade, which is increased by the tufts of foliage where the light falls being of a silvery hue. Its height, when well grown, is about sixty feet.

The only other Pine which I shall now notice is

The LOFTY WEYMOUTH or BHOTON PINE (*Pinus excelsa*). This tree grows from one hundred to one hundred and twenty feet high, and is then a magnificent object. From seed there are many varieties, some of which are beautiful beyond description. The Hindoos call it the King of Pines. A chief characteristic is its weeping branches, with long, flowing, silvery green leaves. One variety at Elvaston far surpasses in beauty any which I have seen elsewhere: the leaves are very long, and the entire habit compact and dense. Some varieties grow very fast; the timber is also of great value. When the tree is known, it will be much planted.

The ARAUCARIA or CHILI PINE (*Araucaria imbricata*). To any one who has not seen this tree, it is impossible, by a written description, to convey an adequate idea of its true character. It possesses a dignity or grandeur peculiar to itself; it cannot be compared with any other tree. At Elvaston, it has grown as much as twenty-six inches in one year, and for fourteen years has never shed a single leaf. In a young state, it is one of the trees in which nature chooses to be formal; the perfect order and regularity in the branches and leaves give it a charm which it otherwise could not have. When the tree exceeds twenty feet in height, the lower branches become pendant, and then an additional grace is added to its already beautiful habit.

On the Cordilleras of Chili it reaches the noble height of one hundred and fifty feet and upwards. Mr. Loudon (in his Arb. Brit., p. 2437) says, when speaking of the properties and uses of this king of trees, "Don Joseph Pavon describes the wood of this tree as of a yellowish white, fibrous, and full of beautiful veins, capable of being polished and worked with facility; he also states that it is well adapted for ship-building, as was proved by the experiments of Don Francisco Dendariarena in 1780."

The large ARAUCARIA IMBRICATA at Elvaston Castle, of which the frontispiece is a true portrait, was planted where it now stands in November, 1836. It was, at that time, only 3 feet 9 inches high, and after fifteen summers have passed over it, it measures about 29 feet in height, or 20 inches as the average growth of each year since it has been planted. The diameter of the branches is upwards of 14 feet. I have given the dimensions and character of this noble tree by way of encouraging others to plant it, and to show what they may reasonably expect in a given time, should they give their trees suitably prepared situations. As to soil, it will grow in almost any which is tolerably good, where the air can be freely admitted to its roots; and when planted in light soil, and well raised, it should have two or three *copious waterings* during the growing season: this will have a tendency to push it along.

In its native habitats it is generally found growing luxuriantly in soils with a rocky substratum, where kept moist by rain and falls of snow. It grows on the western declivities of the Andes, and even reaches the snow line. Its extreme hardiness in this country has been severely tested. Our finest plant stood without protection in January, 1838, the thermometer at zero.

BASTARD CEDAR (*Sequoia sempervirens: Taxodium sempervirens* of most nurseries), is a most surprising tree from the almost incredible size to which it grows. It has not been in this country more than seven years. Messrs. Knight and Perry (in their excellent Descriptive Catalogue of coniferous plants) say, when speaking of it, "One tree, which was called by the American settlers the Giant of the Forest, measured two hundred and seventy feet in height, and had a trunk fifty-five feet in circumference at six feet from the ground." The wood of this tree is a beautiful red; fine and close-grained, but light and brittle; the boards, when seasoned, do not warp, and it is never attacked by insects. There is a horizontal slab of this wood at St. Petersburg, and one thousand and eight annual rings mark its great age.

JAPAN CEDAR (*Cryptomeria Japonica*) has only been in this country about seven years, seeds having been first sent from China by Mr. Fortune in 1844, and now there are specimens thirteen feet high.

Like the Araucaria, no other hardy tree known in this country can convey any idea of its beauty and elegance. Though perfectly hardy, it possesses all the gracefulness and apparent delicacy of the Moreton Bay Pine (*Araucaria Cunninghami*) to which Mr. Gordon, in the Journal of the Horticultural Society, has compared it. This tree grows with a straight stem to the height of one hundred feet, and its elegant flowing branches, with persistent foliage, being of a pleasing, middle-toned green, all combine to make it a tree of the most refined and attractive kind, and as such it will be extensively planted. The wood is also valuable.

The COMMON YEW (*Taxus baccata*) is too well known to need any description, although its invaluable properties in artistic gardening have been much overlooked. As a tree both for ornament and shelter it cannot be too highly rated: nevertheless, when used for protection, it must never be allowed to be within the reach of cattle, on account of the poisonous nature of its branches when eaten by them.

The IRISH YEW (*Taxus baccata fastigiata*) is likewise well known, and invaluable both for form and colour, as has been already noticed.

The GOLD-STRIPED YEW (*Taxus baccata foliis variegatis*), is a plant little known in gardens, being almost exclusively confined to a few nurserymen and amateurs in Coniferæ, and but for the manner in which it has been treated at Elvaston, might to the present day have remained unnoticed. No plant which can be named in British gardens is capable of doing more in decorating a landscape than this tree.

Several other varieties of the deepest interest might be named; but as some are too scarce, and others too small, at present to be used for pictorial effect, unless on a very limited scale, the names of the most interesting may suffice:—

UPRIGHT COMMON YEW (*Taxus baccata erecta*).

WEEPING Ditto (*Dovastoni*).

GOLD-STRIPED IRISH Ditto (*Taxus fastigiata foliis variegatis*).

SILVER-STRIPED Ditto (*Taxus elegantissima*). This is a hybrid between the Common Gold-striped and Irish Yew.

CANADIAN YEW (*Taxus Canadensis*). This is a distinct plant with smaller, partially reflexed leaves, and of a dingy or brownish green colour, unlike the Common Yew.

CEPHALOTAXUS and TORREYA are nearly allied to the Yew, and in a few years will excite great interest when they become sufficiently large to produce effect. Their leaves are much larger than those of the Common or Irish Yew, and their colour as propitious.

CEPHALOTAXUS PEDUNCULATA: long spreading leaves, white underneath and middle-tinted green above.

CEPHALOTAXUS DRUPACEA: in habit, leaf, and colour, like a gigantic Irish Yew.

CEPHALOTAXUS FORTUNI: widely spreading leaves, very large, and deep green.

TORREYA TAXIFOLIA has a long, sharply-pointed, shining leaf, of a brownish green, in winter especially.

The CYPRESS (*Cupressus sempervirens*) is well known in British gardens. The three following species, which have been recently introduced to this country, will give quite a new feature to our park scenery and villa residences, and to the country generally.

Large-fruited Cypress of California (*Cupressus macrocarpa*). This noble tree has both dignity of form and exquisite colour to recommend it to one's notice. In a young state it grows very rapidly, and ultimately attains the height of sixty feet, with widely-spreading, horizontal branches, like a Cedar of Lebanon. Its rich, warm green (like Pinus insignis) it retains during winter, consequently the effect which it will produce in the landscape will be of the finest order.

Gowen's Cypress (*Cupressus Goveniana*), although a shrub, when compared with the foregoing species, yet like it, comes from the country of gold; partakes of the same golden or yellow green; and its pyramidal form of growth, and delicate beautiful texture, render it an object of the greatest attention for foreground planting.

The celebrated **Funebral Cypress of China** (*Cupressus funebris*) must be in name familiar to every one. It is not of a size or habit yet to enable one to form otherwise than an abstract idea of its beauty, but enough has been said in the "Gardener's Chronicle," and other publications of authority, to justify its being planted on the most extensive scale.

Mr. Fortune, to whom we are, through the Horticultural Society of London, indebted for this and many other lovely trees, says, when describing it, "it is a noble Fir-like tree, about sixty feet in height, having a stem as straight as the Norfolk Island Pine, and pendulous branches like the Weeping Willow. The branches grow, at first horizontally, then describe a graceful curve upwards, and droop again at the points. From these main branches others, long and slender, hang down towards the ground, and give the whole tree a weeping and graceful form.

The VARIEGATED WHITE CEDAR (*Cupressus thyoides variegata*) is a valuable plant, but little known to the public, until brought into notice at Elvaston, where it has been largely planted. Its beautiful creamy yellow variegation in winter is very striking and effective.

In noticing the ARBOR-VITÆS and JUNIPERS, although they deserve to have much to be said in their favour, still I must be brief.

Botanists as well as planters have been at work lately amongst them, the one trying to improve their names, as the other their localities; which of the two will do the most for us in the end is not for me to say, but both shall have my best thanks in proportion as I find their exertions contribute to the improved appearance and extensive cultivation of these delightful plants.

The Arbor-vitæs, some of which are still known by the old name Thuya, and others by the new one of Biota, are plants already well known, as also, in part, their value as ornamental decorations.

THUYA PLICATA. This and TATARICA are both interesting and beautiful, and the latter especially. In winter they take a brownish neutral tint, and form an admirable back-ground for Chinese Juniper, with its lively greens.

ORIENTALIS or CHINESE ARBOR-VITÆ. This is a lovely plant, whether viewed near or at a distance; when looked upon near to it, its beautifully compressed, flattened, coral-like branchlets are very rich, and its delightful warm green makes it worthy of a first place in a good picture of evergreens.

THUYA PENDULA, a beautiful weeping shrub, with pensile branchlets hanging from the branches, like tassels of green whipcord.

LIBOCEDRUS CHILENSIS, or CHILIAN ARBOR-VITÆ, is still small in this country, but enough has been seen to justify the description given. It is a tree of surpassing beauty, and when proved to be perfectly hardy, which I think it is, having stood a test by which I have proved the hardiness of others,—viz., by placing a small piece in an ice-house for a night, and then thawing it again without injury. In point of colour this is a great acquisition, as it has much of the silvery tint in its composition. The family of Junipers being a numerous one, and every hardy species being of interest to the British planter, I must refer my readers for further information, not only respecting Junipers, but coniferous and other hardy evergreens of the fir tribe, to Mr. Loudon's "Arb. et Fruticetum Britannicum," and other standard works, where they are described at length. An excellent descriptive priced List has been published by Messrs. Lawson and Son, Edinburgh. I can only here mention such as have been used at Elvaston extensively with a view to pictorial effect.

The CAUCASIAN or WEEPING JUNIPER (*Juniperis communis Caucasica*). This is a great acquisition near water and rock, as many of the Junipers are; its upright habit, and long pendant branchlets, give it a grace which is beautiful.

The next two, the SPANISH and SWEDISH JUNIPERS (*Juniperus communis Hispanica* and *Suecica*), from their narrow, compact, and neat appearance, looking at all times as if they had been kept in form, are admirably suited either for geometrical gardens or rockeries, and when placed in front of, or near to, the common Yew, they stand out in bold relief.

The RECURVED JUNIPER (*Juniperus recurva*) is a universal favourite, of a beautiful weeping and full habit; it grows about fifteen feet high.

The CHINESE JUNIPER (*Juniperus Chinensis*) is a tree amongst the Junipers reaching thirty feet and upwards in height; it partakes of the open and glaucous habit, also of the warm, green, and imbricated, or whipcord habit; in either case it is beautiful, but especially when both are present, which is often the case in small plants. This is one of our greatest ornaments in dressed gardens. The male plant is decidedly the most beautiful; the female, at present, is scarce.

The INCENSE-BEARING JUNIPER (*Juniperus thurifera*). The tall Juniper and Juniperus excelsa are both tall conical trees of the greatest beauty, reaching the height of thirty-five or forty feet; delicate in texture, symmetrical in form, and pleasing in colour, both are fitted for the most favoured situations. To an unpractised eye they may be mistaken, one for the other, although they are specifically distinct.

The RED CEDAR (*Juniperus Virginiana*) is known to almost every one; not so all its beautiful varieties, varying from the warmest to the coldest greens, and as the gradations of colour and form or habit in plants are studied, very pleasing effects may be produced with this plant alone.

LYCIAN JUNIPER (*Juniperus Lycia*) is a beautiful plant, of a wild tufted habit, admirably adapted for a rocky scene, or near water.

TAMARISK-LEAVED JUNIPER (*Juniperus tamariscifolia*). This is a charming plant for rock, and for planting on banks, and raised bases of trees. Sharp and pointed in outline; glaucous in colour; prostrate in habit; and when mixed with some of the hardy heaths has a pleasing effect.

The COMMON SAVIN (*Juniperus Sabina*), though so well known as a single plant in old gardens, does not seem to be known as it deserves, as the wild grandeur which it is capable of producing in connexion with these scenes seems to have been little studied: for breaking an unpleasant line, or uniting in a very agreeable way that which is wild and rude with that which is more refined, it is admirably suited.

VARIEGATED SAVIN (*Juniperus Sabina foliis variegatis*). This little plant is very beautiful, forming a constant and pleasing variegation, and valuable in the same way as Tamariscifolia.

CHAPTER IX.

CONCLUDING REMARKS.

In order that trees may succeed and flourish luxuriantly, every possible advantage should be given them, by the ground being trenched to the depth of the soil, and where labour can be afforded the subsoil ought to be loosened at the bottom of each trench. Where the subsoil is of a stiff or clayey nature, and the soil above, light, a portion of the subsoil may be mixed with it beneficially; and where trees are to be placed singly in pleasure grounds or on lawns, pits should be well prepared for them by deep trenching, and additional soil added when practicable.

In all such cases where they are to remain as single objects of attraction, they ought to be raised on mounds, as nothing looks worse than to see the stem of a tree buried in a pit, besides, any additional soil given to form a proper basis, also adds to the vigorous aftergrowth of the tree.

Even the most common observers are pleased in looking upon healthy trees; but unless justice be done to their roots when planted, disappointment must follow.

Whoever can afford a piece of ground for the growth of an ornamental tree, should contrive to have a tree which will prove an ornament, both by its innate beauty and vigorous development after it is planted. Nothing contributes more to the consequence of a beautiful tree on a lawn, than a raised circular basis, the sides all round forming an easy curve and grassed. By this means a play of light and shade is given, which counteracts the monotony of a flat surface, and gives picturesque effect; of course this will not be so much required where the ground naturally undulates.

At Elvaston the surface is naturally flat and uninteresting, and by means of raised mounds for single trees, and also small clumps and occasional undulating embankments, pleasing variety and great beauty are given, and many small plants rendered of consequence, which on a flat surface would have been comparatively uninteresting. For dry seasons, when it can be conveniently managed, at the time the trees are making their growth, the greatest possible advantage will be gained, by copious watering at the roots; I mean such as are established, whatever their size may be: of course the remark will only apply to favourite ornamental kinds.

Many trees, recently introduced, resist in their indigenous state a degree of cold much greater than we ever experience in this country, which nevertheless suffer much from our variable climate, especially from spring frosts; such trees in a small state are much more liable to be injured than when they become larger, from their being sooner and more easily excited. I find that pines do best in deep, sandy, and light soils, but this is not the case with firs, particularly the Silver Fir section. After repeated trials, I find them succeed much better in a strong marly loam, or even bordering on clay; and I am persuaded that Picea Webbiana, by being planted in a strong soil will succeed. A fine plant on an island here, planted in very strong soil (being a mixture of soil and clay), has stood four years without being injured, whilst other plants in much drier situations, and with light soil, have each year been injured by frost. The tree is not so soon excited in spring, when the soil is cold and stiff, as when the reverse.

I believe an advantage may be gained by planting some of the kinds liable to be injured by spring frosts, in plantations where the soil is strong and the other trees tolerably large, such kinds as Picea Webbiana, Pichta Cephalonica, and Brunoniana, may be thus treated.

Where trees are planted in considerable numbers, it is difficult to attend to each plant individually, so that nature, being assisted by art, each tree may be made the most of, and the end be answered for which they were planted. But where a few plants as favourite specimens can be attended to, it is astonishing what may be done in a short time, to promote and ensure a full and vigorous development.

For example, I have occasionally met with much disappointment in having the leaders of plants destroyed when in a young and very tender state, by birds settling upon them before they were able to bear their weight: I have frequently seen the tender leader of a fine Abies Douglasi broken by a blackbird taking a spring from it, when about to take wing. To meet this evil I have had small pointed sticks fastened to the stem, the point standing a sufficient height above the young shoot to prevent the bird from settling upon it. And to protect the leaders from frost, small conical caps of asphalted felt and bell glasses have been used, fastened upon a stick above the bud. I believe the best covering is a light conical cap made of felt, with a piece of glass on the north side, to admit light; this need not be taken off from the end of October until the middle of May, when all danger is over. If the leader be secured the plant will get up and in time make a fine tree.

A good deal has been said against tying up the leaders of Cedrus Deodara, which to a certain extent is right; but the following evil must be remedied. Often the leading shoots of Deodar Cedars are blown off during a high wind in autumn, from a sudden jerk; and not only the growth of one year lost, but the symmetry of the tree is much injured, unless some pains be taken to train up a lateral shoot as leader; now the only way to prevent this is by tying the leader at least half way up the growth of the current year, at the same time, allowing the part above to remain in its recurved pendant habit, which is essential to the protection of the leading bud.

Again, by removing rival leaders, checking over luxuriant laterals, or side branches, which may be taking a wrong direction, increased height, with symmetry and compactness of habit, when desired, may be given at pleasure.

From the nature and extent of the operations carried on at Elvaston Castle, during the last twenty years, much might have been added to the present work, of sufficient interest to have justified its insertion, and to have repaid the generality of readers for its perusal; but that would have been extraneous to the original design; my chief aim being, to give an impetus to a style of planting in this country, somewhat in accordance with an age of improvement; seeing that facilities are now afforded us which were not presented to our ancestors and predecessors. With such as take an interest in the cultivation of our finest trees, I have little doubt of this volume being favourably received and appreciated in proportion to its intrinsic worth; and to others it will become more interesting and valuable as their attention is turned to the subject: at all events, however far the desired end may be accomplished, I shall have the satisfaction of knowing I have made an attempt at improvement for the benefit of others, and to a rightly regulated mind there is an inward enjoyment arising from this, which is well understood and valued by such as do not wish to live for themselves alone.

Fond as I have been of the study of trees, I deem the construction and consequent peculiarities of the human mind, a subject of deeper interest still; and to little purpose would I have looked into that, were I to flatter myself that my little work will be read with anything like general approval; I expect to meet with objectors and fault-finders, and to all such I am willing to tender my sincere thanks, *on condition* that *whatever is faulty, they will improve;* but such as cannot mend it, I earnestly entreat not to meddle with it.

THE END.

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